PowerScan® 7000 Linear Imager

Product Reference Guide

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Chapter 1

Getting Started

The PowerScan® 7000 Linear Imager marks a new performance level for handheld scanners. It delivers aggressive read rates and depths of field on 1D and stacked codes. This aggressiveness applies even in challenging reading environments where low lighting conditions and poor quality might make it difficult to read bar codes. You can rest assured your investment will continue to supply years of use by reading any bar codes you require, now or in the future.

Designed for today's demanding commercial and industrial environments, the scanner offers superior image quality, speed, durability, and the ability to read poor quality bar codes. The unit is comfortable to hold, easy to use, rugged, and excellent for the most demanding applications.

About This Manual

This Product Reference Guide (PRG) provides programming instructions for the scanner, plus product specifications and dimensions. For installation, maintenance, troubleshooting and warranty information, see the Quick Reference Guide (QRG). Copies of other publications for this product are downloadable free of charge from the PSC website listed on the back cover of this manual.

The scanner is factory programmed for the most common terminal and communications settings. If you need to change these settings, programming is accomplished by scanning the bar codes in this guide.

Bold text and a yellow-highlighted background indicates the most common default setting for a feature/option.

Manual Conventions

The symbols listed below are used in this manual to notify the reader of key issues or procedures that must be observed when using the scanner:

Notes contain information necessary for properly diagnosing, repairing and operating the scanner.

NOTE

The CAUTION symbol advises you of actions that could damage equipment or property.

CAUTION

Connecting the Scanner

Use the appropriate instructions below to connect the scanner to the terminal, PC or other host device. The scanner kit you ordered to match your interface should provide a compatible cable for your installation. The scanner cable connection is secured using the "clamshell" retainer referenced in the enlarged area of Figure 1. Fit and clamp the retainer over the cable connector as shown in the illustration, then fully seat the cable assembly into the scanner, aligning both the connector and the retainer boss with their respective openings. Secure the captive screws.

Upon completing the connection via the appropriate interface instructions below, proceed to the Interface Related Features section of this manual and scan the bar code to select the correct interface type.

RS-232 Serial Connection — Turn off power to the terminal/PC and connect the scanner to the terminal/PC serial port via the RS-232 cable as shown in Figure 1. If the terminal will not support POT (Power Off the Terminal) to supply scanner power, use the approved power supply (AC Adapter). Plug the AC Adapter barrel connector into the socket on the RS-232 cable connector and the AC Adapter plug into a standard power outlet.

Figure 1. RS-232 Serial Connection

Cable Connector
Retainer Boss

Captive
Screws
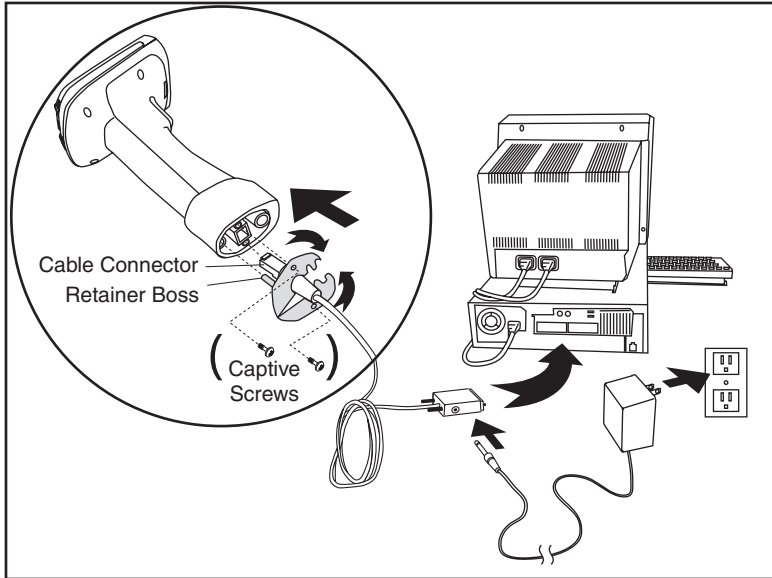
USB Connection — Connect the scanner to a USB port on the terminal/PC using the correct USB cable for the interface type you ordered. Reference Figure 2.

Figure 2. USB Connection

USB

Keyboard Wedge

or...

Wand

or...

IBM

or...
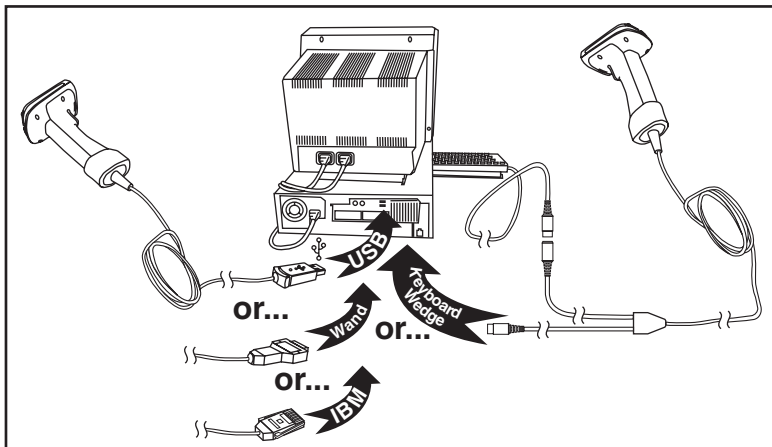
Wand Emulation Connection — Connect the scanner to the appropriated port on the terminal/PC using the correct cable for the interface type you ordered. Reference Figure 2.

IBM Connection — Connect the scanner to the IBM port on the terminal/PC using the correct IBM cable. Reference Figure 2.

Keyboard Wedge Connection — The Keyboard Wedge cable has a 'Y' connection from the scanner. Connect the female to the male end from the keyboard and the remaining end at the keyboard port at the terminal/PC. Reference Figure 2.

Programming

The scanner is typically factory-configured with a set of default features standard to the interface type you ordered. After scanning the interface bar code from the Interface Related Features section, you can select other options and customize your scanner through use of the instructions and programming bar codes available in that section and also the Data Editing and Symbologies chapters of this manual.

Resetting the Standard Product Defaults

If you aren't sure what programming options are in your scanner, or you've changed some options and want the factory settings restored, scan the *Standard Product Default Settings* bar code below. This will copy the factory configuration for the currently active interface to the current configuration.

Standard Product Default Settings
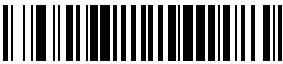
The programming section lists the factory default settings for each of the menu commands (indicated by shaded blocks and bold text) on the following pages.
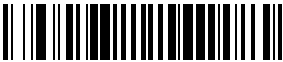
Chapter 2
General Features

Double Read Timeout

The Double Read Timeout feature sets a time limit that determines how much time must pass before reading the same label again (e.g. two identical items in succession).
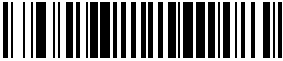
START	
DURATION	BARCODE
0.1 Second	
0.2 Second	
0.3 Second	
0.4 Second	

Double Read Timeout — continued
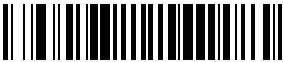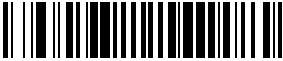
DURATION	BARCODE
START	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
0.5 Second	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖‖
0.6 Second	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖‖
0.7 Second	‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖ ‖‖‖
0.8 Second	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖
0.9 Second	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖ ‖‖‖‖‖ ‖‖‖
1 Second	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖ ‖‖‖
END	‖‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖

Powerdown Timeout

The Powerdown Timeout feature sets the time for automatically switching the unit off when the scanner is not in use.

START	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
DURATION	BARCODE
Disable	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
5 Seconds	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
15 Seconds	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
30 Seconds	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
1 Minute	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
2 Minutes	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
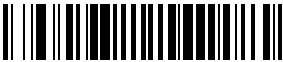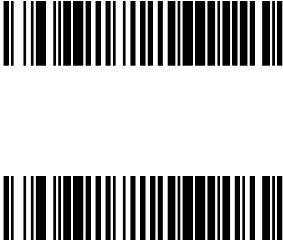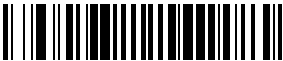
Powerdown Timeout — continued

DURATION	BARCODE
START	
3 Minutes	
4 Minutes	
END	

LED and Beeper Indicators

Power On Alert

Disables or enables the indication (from the Beeper) that the scanner is receiving power.

START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖ ‖‖
STATE	BARCODE
Disable	‖ ‖‖ ‖‖‖‖‖‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖
Enable	‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖ ‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖ ‖

Good Read: When to Indicate

This feature specifies when the scanner will provide indication (beep and/or flash its green LED) upon successfully reading a bar code. Choices are:
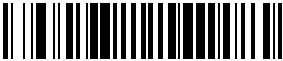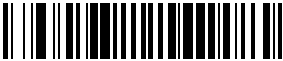
- Good Read = Indicate after decode

- Good Read = Indicate after transmit

- Good Read = Indicate after CTS goes inactive, then active
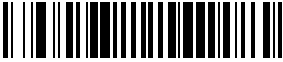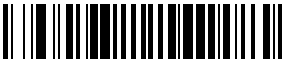
This option, which uses CTS, is only valid for RS-232 interfaces.

NOTE

INDICATE	BARCODE
START	
After decode	
After transmit	
After CTS goes inactive, then active	
END	
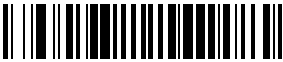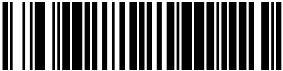
Good Read Beep Control

This feature enables/disables the scanner's ability to beep upon a successful decode of a bar code.

START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
STATE	**BARCODE**
Disable	‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖
Enable	‖ ‖‖ ‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
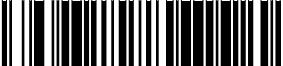
Good Read Beep Frequency

Adjusts the good read beep to sound at a selectable low, medium or high frequency, selectable from the list below. (Controls the beeper's pitch/tone.)
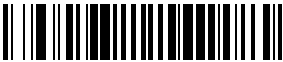
START	‖ ‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖
FREQUENCY	BARCODE
Low	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖
Medium	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖
High	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖

Good Read Beep Length

Specifies the duration of a good read beep.
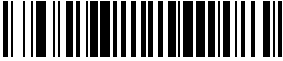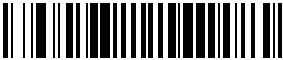
LENGTH	BARCODE
START	
60msec	
80msec	
100msec	
120msec	
140msec	
160msec	

Good Read Beep Length — continued

START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖ ‖‖
LENGTH	BARCODE
180msec	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖ ‖
200msec	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖ ‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖ ‖

Good Read Beep Volume

Selects the beeper volume (loudness) upon a good read beep. There are three selectable volume levels.

START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
VOLUME	BARCODE
Low	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
Medium	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖ ‖‖ ‖‖
High	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖ ‖
END	‖ ‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖

Scanning Features

Scan Mode

Selects the scan operating mode for the scanner. Selections are:

- Single — When the trigger is pulled, scanning is activated until five seconds have elapsed or a bar code has been read or the trigger is released

- Triggerless — When the trigger is pulled, scanning is activated until any of the following occur:
  - Active Scanning Time has expired
  - a bar code has been read
  - the trigger is pulled a second time

  The Double Read Timeout feature gates double reads while in this mode.

- Stand — No trigger pull is required to read a bar code while in this mode. Scanning is turned on automatically (auto-sense) when an item is placed in the scanner's field of view and is turned off again when a bar code is read or Active Scanning Time has expired. The Double Read Timeout feature gates double reads while in this mode. If the trigger is pulled, the scanner acts as if it is in single read mode.
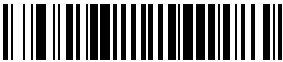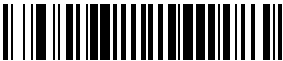
  Upon exiting Single Read mode while Stand Mode is enabled, the software will delay 2 seconds before beginning its auto-sense operation.

  NOTE

- Stand With Illumination — Same as the option above, except that illumination is on while in this mode.

Scan Mode — continued
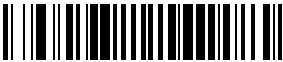
MODE	BARCODE
START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
Single	‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖‖
Triggerless	‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖‖
Stand	‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖‖
Stand w/Illum	‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖

Active Scanning Time

This setting determines the amount of time the scanner continues to scan in triggerless or stand mode (see Scan Mode) once scanning has been activated.

START	
DURATION	BARCODE
1 Second	
2 Seconds	
5 Seconds	
15 Seconds	
30 Seconds	
1 Minute	

Active Scanning Time — continued

DURATION	BARCODE
START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
2 Minutes	‖ ‖‖ ‖‖‖‖‖ ‖ ‖ ‖ ‖‖‖‖‖‖‖ ‖‖ ‖
3 Minutes	‖ ‖‖ ‖‖‖‖‖ ‖ ‖ ‖ ‖‖ ‖‖‖‖‖‖ ‖
4 Minutes	‖ ‖‖ ‖‖‖‖‖‖‖ ‖ ‖ ‖ ‖‖‖‖‖ ‖‖ ‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖
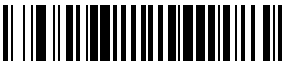
Laser Pointer Control
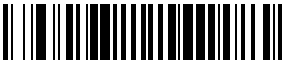
The Laser Pointer is a value-added option which might not have been included when your scanner was ordered.

NOTE
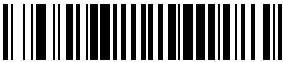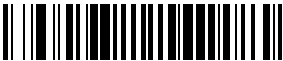
When the trigger is pressed and Scan Mode is set to Single, the laser pointer will be activated for the time period configured by this feature. Immediately following this, the scanner will start scanning. Disabling this feature turns the pointer off.

START	
DURATION	BARCODE
Disable	
0.1 Seconds	
0.2 Seconds	
0.3 Seconds	
0.4 Seconds	

Laser Pointer Control — continued

START	‖ ‖▌ ▌‖▌‖‖‖‖‖‖‖‖▌‖‖‖ ▌‖
DURATION	BARCODE
0.5 Seconds	‖ ‖▌ ‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖▌‖ ‖‖
0.6 Seconds	‖ ‖▌ ‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖ ‖ ▌‖‖‖ ▌‖ ‖
0.8 Seconds	‖ ‖▌ ‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖▌ ‖‖ ▌‖
1 Second	‖ ‖ ‖▌ ‖‖‖‖‖‖‖ ‖ ‖ ‖‖‖▌‖ ‖‖ ▌‖
1.2 Seconds	‖ ‖▌ ‖‖‖‖‖‖‖‖ ‖ ‖‖▌‖‖‖▌‖‖‖ ‖ ▌‖
1.5 Seconds	‖ ‖▌ ‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖▌‖‖‖‖‖ ‖‖

Laser Pointer Control — continued

START	||| ||█ |||||||||||||||||||||| |||
DURATION	BARCODE
2 Seconds	||| ||||||||||||| || ||||||| ||| |||
2.5 Seconds	||| ||||||||||| ||	||| |||||| |||
END	||| ||||||||||||||||||||||| |||

Chapter 3

Interface Related Features

At the time of this writing, the Scanner supports the interfaces listed in Table 3-1. Select the desired interface type from the table, then reference the page number given for the customizable features section associated with each interface. See Table 3-2 for a description of each Keyboard Wedge interface type (A through Z as listed).

Table 3-1. Interfaces Supported

a. Consult Table 3-2 for more information regarding keyboard wedge interface types.

The correct interface cable is included for the scanner interface type you ordered.

NOTE
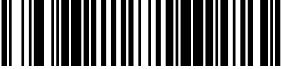
Table 3-2. Keyboard Wedge Interface Reference

I/F Type	PCs Supported
A	PC/XT w/Alternate Key Encoding
B	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key Encoding
C	PS/2 25 and 30 w/Alternate Key Encoding
D	PC/XT w/Standard Key Encoding
E	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding
F	PS/2 25 and 30 w/Standard Key Encoding
G	IBM 3xxx w/122 keyboard
H	IBM 3xxx w/102 keyboard
I	PS/55 5530T w/104 keyboard
J	NEC 9801
K	WYSE 30/30+ WY-30 Keyboard 83 Keys
L	WYSE 60/85/99 GT/150/160/285 Style IBM Enhanced PC, 520/520ES Style IBM Enhanced PC FR WYSE 55/65/65 ES/120/185/325 Style IBM Enhanced PC
M	WYSE 60/85/99 GT/150/160/285 ANSI Keyboard 105 Keys, 520/520 ES ANSI Keyboard 105 Keys WYSE 55/65/65 ES/120/185/325 ANSI Keyboard 105 Keys
N	WYSE 60/85/99 GT/150/160/285 ASCII Kbd, 520/520 ES ASCII Kbd WYSE 55/65/65 ES/120/185/325 ASCII Keyboard
O	WYSE 60/85/99 GT/150/160/285 ANSI W285 Keyboard 105 Keys, 520/520 ES ANSI W285 Keyboard 105 Keys WYSE 55/65/65 ES/120/185/325 ANSI W285 Keyboard 105 Keys
P	WYSE WINTERM 3320 SE
Q	IBM 3153 IBM 316X, 3179/3180/319X/3270
R	IBM 3151/3152-010, 347X/348X
S	DIGITAL VT 220/320/330/340/350/382
T	DIGITAL VT420
U	DIGITAL VT 510/520 IBM ANSI Style Keyboard
V	DIGITAL VT 510/520 IBM PC Style Keyboard
W	SUN SPARC 5/10
X	SUN 420/440, ITX
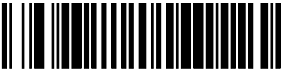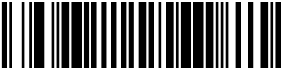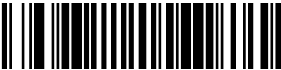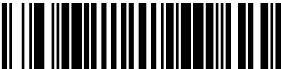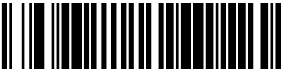
Reference Appendix E, Keyboard Function Key Mappings **for more information about keyboards.**

NOTE
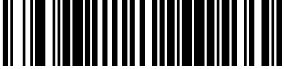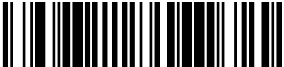
Interface Selection

INTERFACE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖
RS-232 Standard	‖‖‖‖‖‖‖‖‖‖‖‖
RS-232 Wincor-Nixdorf	‖‖‖‖‖‖‖‖‖‖‖‖
IBM 4683 Port 5B	‖‖‖‖‖‖‖‖‖‖‖‖
IBM 4683 Port 9B	‖‖‖‖‖‖‖‖‖‖‖‖
IBM 4683 Port 17	‖‖‖‖‖‖‖‖‖‖‖‖
IBM USB	‖‖‖‖‖‖‖‖‖‖‖‖
USB Keyboard	‖‖‖‖‖‖‖‖‖‖‖‖

Interface Selection — cont.

START	‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖‖‖
INTERFACE	BARCODE
Keyboard Wedge A	‖‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖
Keyboard Wedge B	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖
Keyboard Wedge C	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖‖
Keyboard Wedge D	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖ ‖‖
Keyboard Wedge E	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖
Keyboard Wedge F	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖ ‖‖
Keyboard Wedge G	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖‖ ‖‖
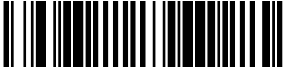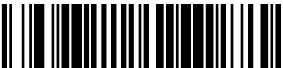
Interface Selection — cont.

START	‖‖‖ ‖‖‖‖‖‖ ‖‖‖‖‖ ‖‖‖
INTERFACE	BARCODE
Keyboard Wedge H	‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖‖ ‖‖ ‖‖
Keyboard Wedge I	‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖ ‖‖
Keyboard Wedge J	‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖
Keyboard Wedge K	‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖
Keyboard Wedge L	‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖
Keyboard Wedge M	‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖
Keyboard Wedge N	‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖ ‖‖

Interface Selection — cont.
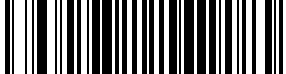
START	‖‖‖‖‖‖‖‖‖‖‖‖‖
INTERFACE	BARCODE
Keyboard Wedge O	‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge P	‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge Q	‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge R	‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge S	‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge T	‖‖‖‖‖‖‖‖‖‖‖‖‖

Interface Selection — cont.

START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
INTERFACE	BARCODE
Keyboard Wedge U	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge V	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge W	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Keyboard Wedge X	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Wand Emulation	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Interface Features
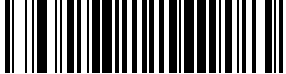
Global Interface Features

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖
Obey Host Commands	‖‖‖‖‖‖‖‖‖‖‖
Ignore Host Commands	‖‖‖‖‖‖‖‖‖‖‖
Host Transmission Buffers = 1	‖‖‖‖‖‖‖‖‖‖‖
Host Transmission Buffers = 2	‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖

RS-232 Interface Features

START	
BAUD RATE	BARCODE
1200 Baud	
2400 Baud	
4800 Baud	
9600 Baud	
19200 Baud	
38400 Baud	

RS-232 Interface Features — cont.

START	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
BAUD RATE	**BARCODE**
57600 Baud	‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖ ‖‖ ‖
115200 Baud	‖‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖ ‖‖ ‖
END	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

RS-232 Interface Features — cont.

STATE	BARCODE
START	
7 Data Bits	
8 Data Bits	
1 Stop Bit	
2 Stop Bits	
Parity = None	

RS-232 Interface Features — cont.

START	||| || ||| ||||| ||||||||||||||||| |||
STATE	BARCODE
Parity = Even	||| || ||||||||	|||||||||||| |||	
Parity = Odd	||| || ||||||||	||||||||||||| ||	
END	||| || ||||||||||||||||||||| |||

RS-232 Interface Features — cont.

Hardware Flow Control

Disable Hardware Control — The scanner transmits to the host regardless of any activity on the CTS line.

Enable CTS Flow Control — The CTS signal controls transmission of data to the host.

Enable CTS Scan Control — The CTS line must be active for the scanner to read and transmit data. While the CTS line is inactive, the scanner remains in a host-disabled state; following a successful label transmission, the CTS signal must transition to inactive and then to active to enable scanning for the next label.

Intercharacter Delay

This delay is inserted after each data character transmitted. If the transmission speed is too high, the system may not be able to receive all characters. You may need to adjust the delay to make the system work properly.

Software Flow Control

Disables/Enables software control using XON/XOFF characters.

RS-232 Interface Features — cont.

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖
Disable Hardware Control	‖‖‖‖‖‖‖‖‖‖‖
Enable CTS Flow Control	‖‖‖‖‖‖‖‖‖‖‖
Enable CTS Scan Control	‖‖‖‖‖‖‖‖‖‖‖
Inter-Char Delay = No Delay	‖‖‖‖‖‖‖‖‖‖‖
Interchar Delay = 10 msec	‖‖‖‖‖‖‖‖‖‖‖
Interchar Delay = 20 msec	‖‖‖‖‖‖‖‖‖‖‖

RS-232 Interface Features — cont.

STATE	BARCODE
START	||||||||||||||||||||
Interchar Delay = 30 msec	||||||||||||||||||||
Interchar Delay = 40 msec	||||||||||||||||||||
Interchar Delay = 50 msec	||||||||||||||||||||
Interchar Delay = 60 msec	||||||||||||||||||||
Interchar Delay = 70 msec	||||||||||||||||||||
Interchar Delay = 80 msec	||||||||||||||||||||

RS-232 Interface Features — cont.

STATE	BARCODE
START	‖|‖|‖‖‖‖‖‖‖‖ ‖
Interchar Delay = 90 msec	‖‖|‖‖‖‖‖‖ ‖ ‖‖‖‖‖
Disable Software Flow Control	‖‖|‖‖‖‖‖‖‖‖‖ ‖
Enable Software Flow Control	‖‖|‖‖‖‖‖‖‖‖‖ ‖
END	‖|‖‖|‖‖‖‖‖‖‖‖ ‖

RS-232 Interface Features — cont.

Host Echo

When enabled, this feature passes all data through the scanner to the host as it comes in. This feature is used for applications where "daisy chaining" of RS-232 devices onto the same cable is necessary. If, for example, one of the devices in the chain is a terminal where someone is entering data while another person is simultaneously scanning a bar code requiring transmission to the host, the scanner will wait for the RS-232 channel to be quiet for a specified period of time (set via *RS-232 Host Echo Quiet Interval*). The scanner can be set to observe this delay before sending its data in order to avoid RS-232 transmission conflicts.

Host Echo Quiet Interval

This setting specifies the time interval of RS-232 channel inactivity which must transpire before the scanner will break the host echo loop to transmit the bar code data that has just been scanned to the host.

Signal Voltage: Normal/TTL

Specifies whether the RS-232 interface provides TTL levels on the output pins TxD and RTS.

RS-232 Invert

Enables/disables inversion of RS-232 TXD and RXD signals.

RS-232 Interface Features — cont.

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖
Disable Host Echo	‖‖‖‖‖‖‖‖‖‖
Enable Host Echo	‖‖‖‖‖‖‖‖‖‖
Host Echo Quiet Interval = 0msec	‖‖‖‖‖‖‖‖‖‖
Host Echo Quiet Interval = 10msec	‖‖‖‖‖‖‖‖‖‖
Host Echo Quiet Interval = 20msec	‖‖‖‖‖‖‖‖‖‖
Host Echo Quiet Interval = 30msec	‖‖‖‖‖‖‖‖‖‖

RS-232 Interface Features — cont.

STATE	BARCODE
START	
Host Echo Quiet Interval = 40msec	
Host Echo Quiet Interval = 50msec	
Host Echo Quiet Interval = 60msec	
Host Echo Quiet Interval = 70msec	
Host Echo Quiet Interval =80msec	
Host Echo Quiet Interval = 90msec	
Host Echo Quiet Interval = 100msec	

RS-232 Interface Features — cont.

STATE	BARCODE
START	
Signal Voltage: Normal RS-232	
Signal Voltage: TTL	
Disable RS-232 Invert	
Enable RS-232 Invert	
END	

Beep on ASCII BEL

Enables/disables ability of scanner to beep (sound a good read tone) on receiving an ASCII BEL (07 hex).
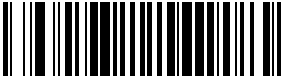
Beep on Not on File

Select for the host to beep (or not) when a not-on-file (host command) condition is detected by the host.

ACK NAK Options

This enables/disables the ability of the scanner to support the RS-232 ACK/NAK protocol. When configured, the scanner and/or host sends an "ACK" when it receives data properly, and sends "NAK" when the data is in error. Selections for this option are:

- Disable

- Enable for label transmission — the scanner expects an ACK/NAK response from the host when a label is sent

- Enable for host-command acknowledge — the scanner will respond with ACK/NAK when the host sends a command

- Enable for label transmission and host-command acknowledge

STATE	BARCODE
START	
Enable Beep on ASCII BEL	
Disable Beep on ASCII BEL	
Disable Beep on Not On File	
Enable Beep on Not On File	

ACK NAK Options — cont.

STATE	BARCODE
START	
Disable ACK NAK	
Enable ACK NAK for Transmission	
Enable ACK NAK for host-command acknowledge	
Enable ACK NAK for trans-mission and host-command	
END	

RS-232 Interface Features — cont.

ACK Character

START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
MODE	**BARCODE**
	Sets the ACK character from the set of ASCII characters or any decimal value from 000 to 255. Pad entries of less than three digits with zeros, as in "005". To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the "Set ACK Character," followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired character. Exit programming mode by scanning the "END" barcode below. **DEFAULT SETTING FOR THIS FEATURE: 006**
Set ACK Character	‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖‖

RS-232 Interface Features — cont.

NAK Character

START	 BARCODE
MODE	BARCODE
	Sets the NAK character from the set of ASCII characters or any decimal value from 000 to 255. Pad entries of less than three digits with zeros, as in "005". To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the "Set NAK Character," followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired character. Exit programming mode by scanning the "END" barcode below. **DEFAULT SETTING FOR THIS FEATURE: 021**
Set NAK Character	
END	

RS-232 Interface Features — cont.

Retry on ACK NAK Timeout

Enables/disables retry after the configurable ACK NAK Timeout Value (set in the following feature) has expired.

START	
STATE	BARCODE
Disable Retry on ACK NAK Timeout	
Enable Retry on ACK NAK Timeout	
END	

RS-232 Interface Features — cont.

ACK NAK Timeout Value

START	
MODE	BARCODE
	This item specifies the time the scanner will wait for an ACK character from the host following a label transmission. 0 = Infinite timeout 1 - 75 = Timeout in 200-millisecond increments To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the "Set ACK NAK Timeout Value," followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired value. Exit programming mode by scanning the "END" barcode below **DEFAULT SETTING FOR THIS FEATURE: 01**
Set ACK NAK Timeout Value	
END	

RS-232 Interface Features — cont.

ACK NAK Retry Count

START	
MODE	**BARCODE**
	This feature sets the number of times for the scanner to retry a label transmission under a retry condition. 0 = No retry 1 - 254 = Retry for the specified number of times 255 = Retry forever To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the "Set ACK NAK Retry Count," followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired retry count. Exit programming mode by scanning the "END" barcode below **DEFAULT SETTING FOR THIS FEATURE: 03**
Set ACK Nak Retry Count	
END	

RS-232 Interface Features — cont.

ACK NAK Error Handling

This item specifies the method the scanner will use to handle errors detected while waiting to receive the ACK character from the host. Errors include unrecognized host commands and communication errors such as parity or framing errors. Choices are:
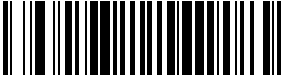
00 = Ignore errors detected (recommended setting)

01 = Process error as valid ACK character (risk of lost label data)

02 = Process error as valid NAK character (risk of duplicate label data)

STATE	BARCODE
START	
Ignore Errors Detected	
Process error as valid ACK character	
Process error as valid NAK character	
END	

RS-232 Interface Features — cont.

Transmission Failure Indication

Enables/disables bad-label indication upon transmission failure.

START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
STATE	**BARCODE**
Disable Transmission Error Indication	‖‖‖‖‖‖‖‖‖‖‖‖‖
Enable Transmission Error Indication	‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖

IBM-USB Interface Features

IBM-USB Device usage

The IBM-USB protocol allows for the scanner to be identified as one of two different types of bar code scanners. Depending on what other scanners you may already have connected to a IBM-USB POS, you may need to change this setting to enable all devices to communicate. Options are:

- Table Top Scanner

- Handheld Scanner

STATE	BARCODE
START	|||||||||||||||||||||||
Configure as Table Top Scanner	|||||||||||||||||||||||
Configure as Handheld Scanner	|||||||||||||||||||||||
END	|||||||||||||||||||||||

IBM

IBM Transmit Labels in Code 39 Format

This feature enables/disables scanner's ability to set a symbology identifier for a specified label to Code 39 before transmitting that label data to an IBM host. This applies to: Code 128, Codabar and Code 93 for IBM USB; Code 128, Codabar and Code 93 for IBM Port 5B; and Codabar and Code 93 for IBM Port 9B.

START	
STATE	BARCODE
Disable Convert to Code 39	
Enable Convert to Code 39	
END	

Wand Emulation

Supported Symbologies

The Wand Emulation interface will transmit bar code data as a wand device would. This interface will transmit the following bar code symbologies:

- UPC/EAN
- UPC/EAN with addons
- Code 39
- Full ASCII Code 39
- Interleaved 2 of 5
- Codabar
- Code 128

Pharmacode 39 is transmitted as Code 39, all other bar code symbology types read by the scanner will be transmitted as Code 128.

Wand Emulation Bar Code Format

The following format settings are required for the wand emulation interface. These settings have been pre-configured at the factory for Wand Emulation scanners.

- UPC-A bar codes must include all 12 digits.
- UPC-E bar codes must contain 8 digits, including a system digit, 6 data digits, and the check digit.
- EAN-13 bar codes must have all 13 digits.
- EAN-8 bar codes must include all 8 digits.
- Code 39, Code 39 Full ASCII, and Pharmacode 39 bar codes must NOT contain start / stop characters.
- Codabar bar codes must include the start / stop characters, presented in the ABCD format.
- Interleaved 2 of 5 bar codes must have an even number of digits.

Wand Emulation — cont.

Bar/Space Polarity

Low/High — Black will be transmitted as a low voltage level (0 to +0.7V) and space as high level (+2.4 to +5.25V).

High/Low — Black will be transmitted as a high voltage level (+2.4 to +5.25V) and space as low level (0 to +0.7V).

Wand Idle State

This feature specifies the level of the wand output signal when idle. TTL logic levels:

High voltage level (+2.4 to +5.25V)

Low voltage level (0 to +0.7V).

START	
STATE	BARCODE
Bar/Space = Low/High	
Bar/Space = High/Low	

Wand Emulation — cont.

STATE	BARCODE
START	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖
Wand Idle State = Low	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖
Wand Idle State = High	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖ ‖‖‖‖‖‖‖‖‖‖

Wand Emulation — cont.

Signal Speed

The speed of the transmission can be set. This selects the width of the minimum narrow bar.

330 microseconds

660 microseconds

START	
STATE	BARCODE
Signal Speed = 330mS	
Signal Speed = 660mS	

Wand Emulation — cont.

Transmit Leading Noise

The transmission of noise pulses before the bar code may be enabled or disabled.

START	
STATE	BARCODE
Disable Trailing Noise	
Enable Trailing Noise	
END	

Symbology Conversion

Wand Emulation can convert all bar codes to a single symbology. Choices are:
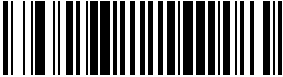
No Conversion

Convert to Code 39

Convert to Code 128

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Disable Leading Noise	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Enable Leading Noise	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
No Symbology Conversion	‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Symbology Conversion — cont.

STATE	BARCODE
START	||| ||| |||| ||||||||||||||| |||
Convert to C39	||| ||||| |||||||| ||| ||| |||||| |||
Convert to C128	||| |||||||||| |||| ||||| |||
END	||| ||| ||||||||||||| |||||| |||

Keyboard Wedge/USB Keyboard

As a keyboard interface, the scanner supports most popular PCs and IBM terminals. The installation of the wedge is a fairly simple process that doesn't require any changes of software or hardware.

NOTE

All of the options in this section apply to the Keyboard Wedge, however, only Keyboard Layout**,** Caps Lock State **and** Control Characters **apply to USB Keyboard.**

Keyboard Layout

The Keyboard Layout option supports many countries. For details about Keyboard Layout, please refer to your operating system manual.

STATE	BARCODE
START			
USA			
Belgium			
Britain			
Denmark			

Keyboard Wedge/USB Keyboard — cont.

STATE	BARCODE
START	
France	
Germany	
Italy	
Norway	
Portugal	
Spain	
Sweden	

Keyboard Wedge/USB Keyboard — cont.

START	‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖
STATE	BARCODE
Switzerland	‖‖ ‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖
Japan 106 Key	‖‖ ‖‖‖ ‖‖‖‖‖‖‖ ‖‖‖‖ ‖ ‖‖‖‖ ‖‖‖
Hungary	‖‖ ‖‖‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖‖ ‖ ‖‖‖‖ ‖‖‖
Czech	‖‖ ‖‖‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖‖ ‖‖ ‖‖‖‖ ‖‖‖
Slovakia	‖‖ ‖‖‖ ‖‖‖‖‖‖‖ ‖ ‖‖‖‖ ‖ ‖‖‖‖ ‖‖‖
Romania	‖‖ ‖‖‖ ‖‖‖‖‖ ‖‖‖‖ ‖‖‖‖‖ ‖‖‖

Keyboard Wedge/USB Keyboard — cont.

START	
STATE	BARCODE
Croatia	
Poland	
END	

Keyboard Wedge/USB Keyboard — cont.

Caps Lock State

Specifies which format the scanner sends character data.

STATE	BARCODE
START	
Disable Caps Lock	
Caps Lock "ON"	
Shift Lock "ON"	
END	

Keyboard Wedge/USB Keyboard — cont.

Keyboard Simulation

All PCs check the keyboard status during the power-on Selftest. It is recommended that you enable this function if you are working without a keyboard installation. It simulates keyboard timing and passes the keyboard status to the PC during power-on.

Control Characters

Specifies how the scanner transmits ASCII control characters to the host. Choices are:

- Disable Control Characters

- Enable transmission of control characters to host

- Send characters between 00H and 1FH according to a special function-key mapping table. (This is used to send keys that are not in the normal ASCII set; a unique set is provided for each available scancode set. Reference Appendix E, Keyboard Function Key Mappings.)

Keyboard Wedge/USB Keyboard — cont.

STATE	BARCODE
START	
Disable Keyboard Simulation	
Enable **Keyboard** Simulation	
Disable Control Characters	
Enable Transmission of Control Characters	
Enable Function Key Mapping	
END	

Keyboard Wedge/USB Keyboard — cont.

Wedge Quiet Interval

NOTE

This feature does not apply to the USB Keyboard interface.

Quiet Interval is the amount of time to look for keyboard activity before the scanner breaks the keyboard connection in order to transmit data to the host..

START	
MODE	BARCODE
	Selectable from 00 (no interval) to 255 in 10 msec increments. Use hexidecimal (range: 00 to FF hexidecimal) to set the interval. To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the Set Wedge Quiet Interval bar code followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired length. Exit programming mode by scanning the "END" barcode below **DEFAULT SETTING FOR THIS FEATURE:** **0A (100 msec)**
Set Wedge Quiet Interval	
END	
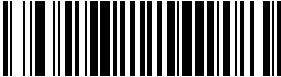
Keyboard Wedge/USB Keyboard — cont.

Intercharacter Delay

This feature does not apply to the USB Keyboard interface.

NOTE

START	‖‖‖‖‖‖‖‖‖‖‖‖‖
MODE	**BARCODE**
	One-half of the delay specified below is inserted between scancodes within each character. If the transmission speed is too high, the system may not be able to receive all characters. You may need to adjust the delay to make the system work properly. Selectable from 00 to 255 in 10msec increments. Use hexidecimal (range: 00 to FF hexidecimal) to set the delay. To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the "Set Intercharacter Delay," followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired length. Exit programming mode by scanning the "END" barcode below **DEFAULT SETTING FOR THIS FEATURE:** **00 (No Delay)**
Set Intercharacter Delay	‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖

Chapter 4
Data Editing

Data Editing Overview

⚠️ **CAUTION**

It is not recommended to use these features with IBM or Wand Emulation interfaces.

When a bar code is scanned, additional information can be sent to the host computer along with the bar code data. This combination of bar code data and supplementary user-defined data is called a "message string." The features in this chapter can be used to build specific user-defined data into a message string.

There are several types of selectable data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. Figure 4-1 shows the available elements you can add to a message string:

Figure 4-1. Breakdown of a Message String

Label ID Transmission: Enable this option to transmit the Label ID you configure for the scanned symbology.

OR...

| Prefix | Label ID | AIM ID | Bar Code Data | Label ID | Suffix |

AIM ID: This function is used to identify and display the common label identifier for its symbology. When enabled, this ID code will be transmitted before the scanned bar code data.

00 - 20 Characters (ASCII)
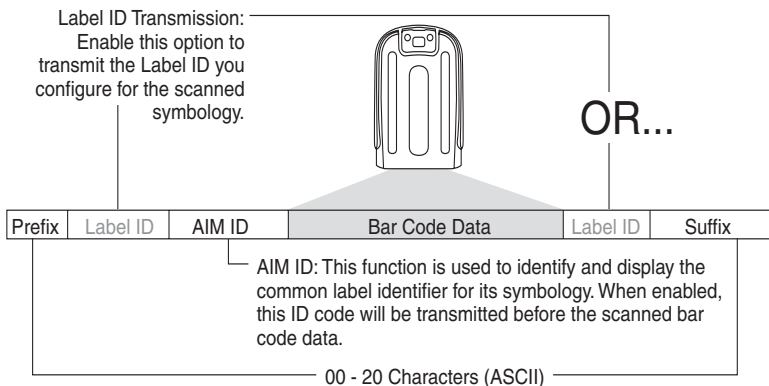
Please Keep In Mind...

- Modifying a message string is not a mandatory requirement. Data editing is sophisticated feature allowing highly customizable output for advanced users. Factory default settings for data editing is typically set to NONE.

- A prefix or suffix may be applied (reference the Symbologies chapter for these settings) across all symbologies (set via the Global features in this chapter).

- You can add any character from the ASCII Chart (from 00-FF) on the inside back cover of this manual as a prefix, suffix or Label ID.

- Enter prefixes and suffixes in the order in which you want them to appear on the output.

Global Prefix/Suffix

Up to 20 ASCII characters may be added as a prefix (in a position before the bar code data) and/or as a suffix (in a position following the bar code data) as indicated in Figure 4-2.

Figure 4-2. Prefix and Suffix Positions
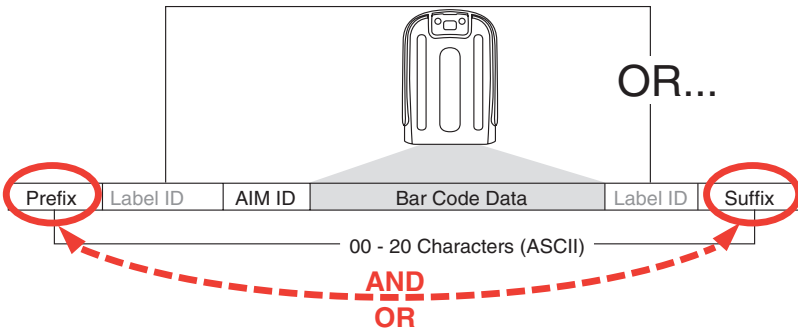
Global Prefix/Suffix — continued

Example: Setting a Prefix

In this example, we'll set a prefix for all symbologies.

1. Determine which ASCII character(s) are to be added to scanned bar code data. In this example, we'll add a dollar sign ('$') as a prefix.

2. Scan the START bar code.

3. Scan the SET PREFIX bar code.

4. Reference the ASCII Chart on the inside back cover of this manual, to find the hex value assigned to the desired character. The corresponding hex number for the '$' character is 24. To enter this selection code, scan the '2' and '4' bar codes from Appendix C, Alpha-Numeric Pad.

5. Scan the END bar code to exit Programming Mode.

> **If less than the expected string of 20 characters are selected, scan the END bar code twice to accept the selections and exit Programming Mode.**
>
> **NOTE**

6. The resulting message string would appear as follows:

Scanned bar code data: 12345
Resulting message string output: $12345

Global Prefix/Suffix — continued

START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
MODE	**BARCODE**
	Sets up to 20 characters each from the set of ASCII characters or any hex value from 0 to FF. To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the "Set Prefix" or "Set Suffix," followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired character(s). Reference the section, Example: Setting a Prefix, for more information. Exit programming mode by scanning the "END" barcode below (scan "END" twice if less than 20 characters have been selected). **DEFAULT SETTING FOR THIS FEATURE: 00 (None)**
Set Prefix	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Set Suffix	‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖‖

AIM ID

AIM label identifiers (as opposed to custom characters you select your-self as with label identifiers) can be included with scanned bar code data. AIM label identifiers consist of three characters as follows:

- A close brace character (ASCII ']'), followed by...

- A code character (see the table below), followed by

- A modifier character (the modifier character is symbol dependent)
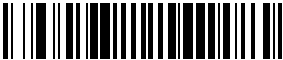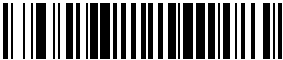
SYMBOLOGY	CHAR	SYMBOLOGY	CHAR
UPC/EAN	E	MSI/Plessey	M
Code 39	A	PDF 417 & Micro PDF 417	L
Codabar	F	RSS (RSS-14, RSS Expanded	e
Interleaved.2 of 5	I	Standard 2 of 5	S
Code 93	G	ISBN	X[a]
Code 128/EAN 128	C		

a. ISBN (X with a 0 modifier character)

Figure 4-3. AIM ID

| Prefix | Label ID | AIM ID | Bar Code Data | Label ID | Suffix |
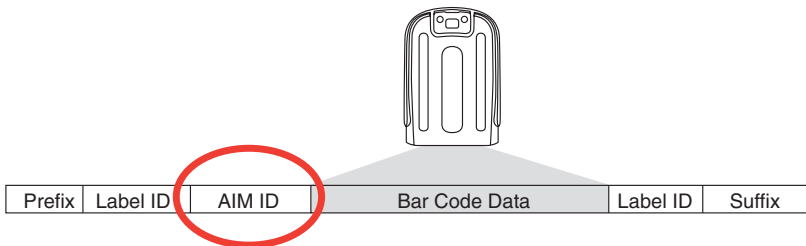
AIM ID — continued

STATE	BARCODE
START	‖ ‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖
Disable AIM ID	‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖ ‖‖
Enable AIM ID	‖ ‖ ‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖ ‖‖
END	‖ ‖ ‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖

Label ID

A Label ID is a customizable code of up to two ASCII characters (00-FF), used to identify a bar code (symbology) type. It can be appended previous to or following the transmitted bar code data depending upon how this option is enabled. This feature provides options for configuring custom Label IDs individually per symbology. If you wish to program the scanner to always include an industry standard label identifier for ALL symbology types, see the previous feature, AIM ID.

To configure a Label ID:

1. Scan the START bar code.

2. Select Label ID position as either BEFORE or AFTER by scanning the appropriate bar code.

3. Scan a bar code to select the symbology for which you wish to configure a custom Label ID.

4. Determine the desired character(s) (you may choose either one or two) which will represent the Label ID for the selected symbology. Next, turn to the ASCII Chart on the inside back cover of this manual and find the equivalent hex digits associated with your choice of Label ID. For example, if you wish to select an equal sign (=) as a Label ID, the chart indicates its associated hex characters as 3D.

5. Turn to Appendix C, Alpha-Numeric Pad and scan the bar codes representing the hex characters determined in the previous step. For the example given, the characters '0', '0', '3' and 'D' would be scanned. The two zeros scanned ('0', '0') represent a selection of "no character," since this option allows for two Label ID characters. (Pad with zeros to enter four hex characters.)

6. Scan the END bar code to exit programming mode.

Figure 4-4. Label ID Position Options

Label ID — continued

OPTION	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖
Label ID Transmission: Disable	‖‖‖‖‖‖‖‖‖‖
Label ID Position: Before Bar Code Data	‖‖‖‖‖‖‖‖‖‖
Label ID Position: After Bar Code Data	‖‖‖‖‖‖‖‖‖‖
Set UPC-A Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**
Set UPC-A w/P2 Addon Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**
Set UPC-A w/P5 Addon Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**

Label ID — continued

OPTION	BARCODE
START	
Set UPC-A w/C128 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**
Set UPC-E Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: E (45 hex)**
Set UPC-E w/P2 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: E (45 hex)**
Set UPC-E w/P5 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: E (45 hex)**
Set UPC-E w/C128 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: E (45 hex)**
Set EAN-8 Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)**
Set EAN-8 w/P2 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)**

Label ID — continued

OPTION	BARCODE
START	
Set EAN-8 w/P5 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)**
Set EAN-8 w/C128 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)**
Set EAN-13 Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: F (46 hex)**
Set EAN-13 w/P2 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: F (46 hex)**
Set EAN-13 w/P5 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: F (46 hex)**
Set EAN-13 w/C128 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: F (46 hex)**
Set ISBN Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: I (49 hex)**
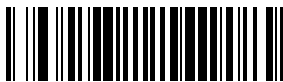
Label ID — continued

START	‖‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖
OPTION	BARCODE
Set GTIN Label ID Character(s)	‖‖ ‖‖‖ ‖‖‖ ‖‖‖‖‖‖ ‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: G (47 hex)**
Set GTIN w/P2 addon Label ID Character(s)	‖‖ ‖‖‖ ‖‖‖ ‖ ‖‖‖‖‖ ‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: G2 (4732 hex)**
Set GTIN w/P5 addon Label ID Character(s)	‖‖ ‖‖‖ ‖‖‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: G5 (4735 hex)**
Set GTIN w/C128 addon Label ID Character(s)	‖‖ ‖‖‖ ‖‖‖ ‖ ‖‖‖‖‖‖‖ ‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: G8 (4738 hex)**
Set RSS-14 Label ID Character(s)	‖‖ ‖‖‖‖‖‖‖ ‖‖ ‖ ‖‖‖‖‖ ‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: R4 (5234 hex)**

Label ID — continued

OPTION	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Set RSS Expanded Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: RX (5258 hex)**
Set Code 39 Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: * (2A hex)**
Set Pharmacode 39 Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**
Set Code 128 Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: # (23 hex)**
Set I 2 of 5 Label ID Character(s)	‖‖‖‖‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE: i (69 hex)**

Label ID — continued

OPTION	BARCODE
START	
Set Codabar Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: % (25 hex)**
Set Code 93 Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: & (26 hex)**
Set MSI/Plessey Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: @ (40 hex)**
Set Std 2 of 5 Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: i (69 hex)**
Set PDF 417 Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: P (50 hex)**
END	

Case Conversion

This feature can convert scanned bar code data to either all lower case or all upper case characters.

NOTE

Case conversion affects ONLY scanned bar code data, and does not affect Label ID, Prefix, Suffix, or other appended data.

START	‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖
MODE	BARCODE
Disable	‖ ‖‖ ‖‖‖ ‖‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖‖
Convert to Upper Case	‖ ‖‖ ‖‖‖ ‖‖ ‖‖ ‖‖‖‖‖‖ ‖‖‖ ‖‖
Convert to Lower Case	‖ ‖‖ ‖‖‖ ‖‖ ‖‖ ‖‖‖‖‖‖‖ ‖ ‖‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖ ‖‖

Character Conversion

Character conversion is an eight byte configuration item. The eight bytes are 4 character pairs represented in hexadecimal ASCII values. The first character in the pair is the character that will be converted. The second character in the pair is the character to convert to. If the character to convert in a pair is **FF**, then no conversion is done.

For example, if you have the character conversion configuration item set to the following: **41423132FFFFFFFF**

The first pair is **4142** or AB (**41** hex is an ASCII capital A, **42** hex is an ASCII capital B) and the second pair is **3132** or 12 (**31** hex is an ASCII 1, **32** is an ASCII 2). The other two pairs are **FFFF** and **FFFF**.

With the label, AB12BA21, it would look as follows after the character conversion: BB22BB22.

The A characters were converted to B characters and the 1 characters were converted to 2 characters. Nothing is done with the last two character pairs, since they are all **FF**.

To set Character Conversion:

1. Scan the START bar code.

2. Scan the Character Conversion bar code.

3. Determine the desired string. Sixteen positions must be determined as in the above example. Next, turn to the ASCII Chart on the inside back cover of this manual and find the equivalent hex digits needed to fulfill the string.

4. Turn to Appendix C, Alpha-Numeric Pad and scan the bar codes representing the hex characters determined in the previous step.

5. Scan the END bar code to exit Programming Mode.

> **If less than the expected string of 16 characters are selected, scan the END bar code twice to accept the selections and exit Programming Mode.**
>
> **NOTE**

Scan the END bar code to exit programming mode.

Character Conversion — continued

START	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖ ‖‖‖ ‖‖‖ ‖‖
MODE	**BARCODE**
Character Conversion	‖‖ ‖‖‖ ‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖‖‖ ‖‖ **DEFAULT SETTING FOR THIS FEATURE:** **FFFFFFFFFFFFFFFF hex (no conversion)**
END	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖‖ ‖‖

Chapter 5

Symbologies

The scanner supports the following symbologies (bar code types). Options for each symbology are included in this chapter.

·UPC-A	·Pharmacode 39
·UPC-E	·Code 128
·EAN-13	·Interleaved 2 of 5
·EAN-8	·Codabar
·RSS-14	·Code 93
·RSS Expanded	·MSI/Plessey
·Code 39	·Standard 2 of 5
·PDF 417	·

Factory Defaults — are indicated in bold text and are highlighted with yellow throughout this section.

UPC-A

The following options apply to the UPC-A symbology.

Disable/Enable UPC-A

When disabled, the scanner will not read UPC-A bar codes.

Check Digit Transmission

Enable this option to transmit the check digit along with UPC-A bar code data.
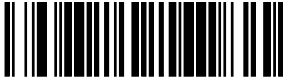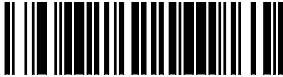
Expand UPC-A to EAN-13

Expands UPC-A data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.
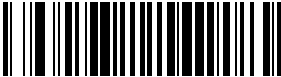
System Number Transmission

This feature enables/disables transmission of UPC-A System Number.

UPC-A — continued

STATE	BARCODE
START	
Disable UPC-A	
Enable UPC-A	
Don't Send Check Digit	
Send Check Digit	
Don't Expand to EAN-13	
Expand to EAN-13	

UPC-A — continued

START	
STATE	BARCODE
Disable System Number Transmission	
Enable System Number Transmission	
END	

UPC-A — continued

UPC-A Minimum Reads

This feature specifies the minimum number of consecutive times a UPC-A label must be decoded before it is accepted as good read.

START	||||| |||||||||||||| ||||||
READS	**BARCODE**
Minimum = 1 Read	|||||||||||||| ||||||||||| ||||
Minimum = 2 Reads	|||||||||||||| ||||||||||| ||||
Minimum = 3 Reads	|||||||||||||| |||| |||||||| |||
Minimum = 4 Reads	|||||||||||| ||| ||||||||||| |||
END	||||||||||||||||||||| |||

UPC-A — continued

In-store Minimum Reads

This feature specifies the minimum number of consecutive times an in-store printed label must be decoded before it is accepted as good read.

START	‖‖‖‖‖‖‖‖‖‖‖
READS	BARCODE
Minimum = 1 Read	‖‖‖‖‖‖‖‖‖‖
Minimum = 2 Reads	‖‖‖‖‖‖‖‖‖‖
Minimum = 3 Reads	‖‖‖‖‖‖‖‖‖‖
Minimum = 4 Reads	‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖

UPC-A — continued

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖
	This item is used to set the timer value when optional add-ons are enabled. The selectable range is from 10 to 300 mSec in 10 mSec increments and is entered in hex (01-0x1E by 01). To configure this feature, scan the "START" bar code above to place the unit in Programming Mode, then the "Add-On Timer," followed by the hex digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing the disired timer setting. Exit programming mode by scanning the "END" bar code below.
Add-On Timer	‖‖‖‖‖‖‖‖‖‖‖‖ **DEFAULT SETTING FOR THIS FEATURE:** **07 (70 milliseconds)**
END	‖‖‖‖‖‖‖‖‖‖‖‖

UPC-E

The following options apply to the UPC-E symbology.

Disable/Enable UPC-E

When disabled, the scanner will not read UPC-E bar codes.

Check Digit Transmission

Enable this option to transmit the check digit along with UPC-E bar code data.

System Number

The System Number (SN) which is usually a zero (0) in the leading position can be optionally included (or not) with scanned bar code data.

Expand to UPC-E to UPC-A

Enables/disables expansion of UPC-E labels to UPC-A.

Expand UPC-E to EAN13

Adds a leading zero to a UPC-E bar code which 'expands' the data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

UPC-E — continued

STATE	BARCODE
START	||| ||| ||| ||| |||||| |||||
Disable UPC-E	||| ||||| ||| || ||||||| ||||
Enable UPC-E	||| ||||| ||| ||||||| ||||
Don't Send Check Digit	|| ||| ||||| ||||||||| ||||
Send Check Digit	|| ||| ||||| |||||||| ||||
Exclude System Number	|| ||| |||||||| |||||||| ||||
Include System Number	|| ||| |||||||| ||||||| ||||

UPC-E — continued

STATE	BARCODE
START	
Don't Expand UPC-E to UPC-A	
Expand UPC-E to UPC-A	
Don't Expand UPC-E to EAN-13	
Expand UPC-E to EAN-13	
END	

UPC-E — continued

Minimum Reads

This feature specifies the minimum number of consecutive times a UPC-E label must be decoded before it is accepted as good read.

START	‖‖‖‖‖‖‖‖‖‖‖‖‖
READS	BARCODE
Minimum = 1 Read	‖‖‖‖‖‖‖‖‖‖‖‖‖
Minimum = 2 Reads	‖‖‖‖‖‖‖‖‖‖‖‖‖
Minimum = 3 Reads	‖‖‖‖‖‖‖‖‖‖‖‖‖
Minimum = 4 Reads	‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖

GTIN

The following options apply to the GTIN label data format.

Disable/Enable GTIN

When this feature is enabled, the scanner will translate UPC/EAN labels to the 14 digit GTIN format.

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖
Disable GTIN	‖‖‖‖‖‖‖‖‖‖‖‖
Enable GTIN	‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖

EAN-13

The following options apply to the EAN-13 symbology.

Disable/Enable EAN-13

When disabled, the scanner will not read EAN-13 bar codes.

Check Digit Transmission

Enable this option to transmit the check digit along with EAN-13 bar code data.

EAN-13 Flag 1 Character

Enables/disables transmission of an EAN/JAN13 Flag1 character.

ISBN

When enabled, this feature truncates the leading three digits from labels that contain ISBN (International Standard Book Number). These codes are used for books and magazines. Labels with ISBN codes start with "978".

Example:

Bar code data: "9789572222720"

Output: "9572222724"

EAN-13 — continued

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖
Disable EAN-13	‖‖‖‖‖‖‖‖‖‖‖‖
Enable EAN-13	‖‖‖‖‖‖‖‖‖‖‖‖
Don't Send Check Digit	‖‖‖‖‖‖‖‖‖‖‖‖
Send Check Digit	‖‖‖‖‖‖‖‖‖‖‖‖
Don't Transmit EAN-13 Flag 1 Char	‖‖‖‖‖‖‖‖‖‖‖‖
Transmit EAN-13 Flag 1 Char	‖‖‖‖‖‖‖‖‖‖‖‖

EAN-13 — continued

STATE	BARCODE
START	‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖
Disable ISBN	‖‖ ‖‖‖‖‖‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖
Enable ISBN	‖‖ ‖‖‖‖‖‖ ‖ ‖ ‖‖‖‖‖ ‖‖‖
END	‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖

EAN-13 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an EAN-13 label must be decoded before it is accepted as good read.

READS	BARCODE
START	
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

EAN-8

The following options apply to the EAN-8 symbology.

Disable/Enable EAN-8

When disabled, the scanner will not read EAN-8 bar codes.

Check Digit Transmission

Enable this option to transmit the check Digit along with EAN-8 bar code data.

STATE	BARCODE
START	
Disable EAN-8	
Enable EAN-8	
Don't Send Check Digit	
Send Check Digit	
END	

EAN-8 — continued

Expand EAN-8 to EAN-13 — Expands EAN-8 data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

STATE	BARCODE
START	
Don't Expand to EAN-13	
Expand to EAN-13	
END	

EAN-8 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an EAN-8 label must be decoded before it is accepted as good read.

START	||||||||||||||||
READS	BARCODE
Minimum = 1 Read	||||||||||||||||
Minimum = 2 Reads	||||||||||||||||
Minimum = 3 Reads	||||||||||||||||
Minimum = 4 Reads	||||||||||||||||
END	||||||||||||||||

Add-ons

Add-ons (or supplemental characters) are commonly added to the end of UPC/EAN bar codes. The scanner will read the add-ons if they are enabled and in the field of view. Three add-on types are supported: 2-digit, 5-digit and Code 128 add-ons. Supported options are:

None — This option directs the scanner to ignore add-on portion of a UPC/EAN bar code but still read the main portion of the bar code.

2 Digits — The scanner will optionally read 2-digit add-ons with the UPC/EAN label.

5 Digits — The scanner will optionally read 5-digit add-ons with the UPC/EAN label.
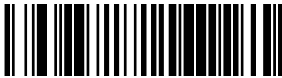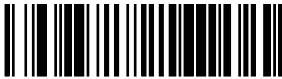
Code 128 Add-on — The scanner will optionally read Code 128 add-ons with the UPC/EAN label.

Contact Customer Support for advanced programming of optional and conditional add-ons.

NOTE

Add-ons — continued

STATE	BARCODE
START	
Disable Optional 2-Digit Add-ons	
Enable Optional 2-Digit Add-ons	
Disable Optional 5-Digit Add-ons	
Enable Optional 5-Digit Add-ons	
Disable Optional Code 128 Add-ons	
Enable Optional Code 128 Add-ons	
END	

RSS-14

The following options apply to the RSS-14 symbology.

Disable/Enable RSS-14

When this feature is disabled, the scanner will not read RSS-14 bar codes.

UCC/EAN 128 Emulation

When enabled, RSS-14 bar codes will be translated to the UCC/EAN 128 label data format.

RSS-14 — continued

STATE	BARCODE
START	
Disable RSS-14	
Enable RSS-14	
Disable UCC/EAN 128 Emulation	
Enable UCC/EAN 128 Emulation	
END	

RSS-14 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an RSS-14 label must be decoded before it is accepted as good read.

START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
READS	BARCODE
Minimum = 1 Read	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Minimum = 2 Reads	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Minimum = 3 Reads	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Minimum = 4 Reads	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖‖

RSS Expanded

The following options apply to the RSS Expanded symbology.

Disable/Enable RSS Expanded

When this feature is disabled, the scanner will not read RSS Expanded bar codes.

UCC/EAN 128 Emulation

When enabled, RSS Expanded bar codes will be translated to the UCC/EAN 128 label data format.

START	‖‖‖‖‖‖‖‖‖‖‖‖‖‖
STATE	**BARCODE**
Disable RSS Expanded	‖‖‖‖‖‖‖‖‖‖‖‖‖
Enable RSS Expanded	‖‖‖‖‖‖‖‖‖‖‖‖‖
Disable UCC/EAN 128 Emulation	‖‖‖‖‖‖‖‖‖‖‖‖‖
Enable UCC/EAN 128 Emulation	‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖

RSS Expanded — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the RSS Expanded Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the RSS Expanded Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the RSS Expanded Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the RSS Expanded Length 1, Length 2 Programming Instructions below.

RSS Expanded — continued

START	‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
MODE	BARCODE
Variable Length Decoding	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Fixed Length Decoding	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

RSS Expanded — continued

RSS Expanded Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

> **For RSS Expanded bar codes, only the data characters are included in the length calculations.**
>
> **NOTE**

4. Scan the END bar code.

SETTING	BARCODE
START	
Set Length 1	DEFAULT SETTING FOR THIS FEATURE: 01
Set Length 2	DEFAULT SETTING FOR THIS FEATURE: 74 decimal
END	

RSS Expanded — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an RSS Expanded label must be decoded before it is accepted as good read.

READS	BARCODE
START	
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

Code 39

The following options apply to the Code 39 symbology.

Disable/Enable Code 39

When this feature is disabled, the scanner will not read Code 39 bar codes.

Check Character Calculation

When enabled, the scanner will calculate the check character of the labels. Turn this option on only when a checksum is present in the Code 39 labels.

Check Character Transmit

Enable this option to transmit the check character with scanned bar code data.

Start/Stop Characters

Enables/disables transmission of Code39 start and stop characters.
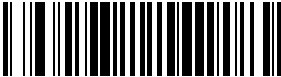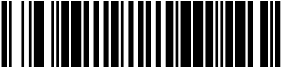
Code 39 Full ASCII

Enables/disables the translation of Code 39 characters to Code 39 full-ASCII characters

Code 39 — continued

STATE	BARCODE
START	
Disable Code 39	
Enable Code 39	
Disable Check Char Calculation	
Enable Check Char Calculation	
Disable Check Char Transmission	
Enable Check Char Transmission	

Code 39 — continued

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖‖
Don't Transmit Start/Stop Characters	‖‖‖‖‖‖‖‖‖‖‖‖‖
Transmit Start/Stop Characters	‖‖‖‖‖‖‖‖‖‖‖‖‖
Disable Code 39 Full ASCII	‖‖‖‖‖‖‖‖‖‖‖‖‖
Enable Code 39 Full ASCII	‖‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖‖‖

Code 39 — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the Code 39 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the Code 39 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the Code 39 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the Code 39 Length 1, Length 2 Programming Instructions below.

Code 39 — continued

START	(barcode)
MODE	BARCODE
Variable Length Decoding	(barcode)
Fixed Length Decoding	(barcode)
END	(barcode)

Code 39 Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

> **For Code 39 bar codes, all check, data and full ASCII shift characters are included in the length calculations. Start/Stop characters are not included.**
>
> **NOTE**

4. Scan the END bar code.

SETTING	BARCODE
Set Length 1	‖‖‖‖‖‖‖‖‖‖‖‖ DEFAULT SETTING FOR THIS FEATURE: 03
Set Length 2	‖‖‖‖‖‖‖‖‖‖‖‖ DEFAULT SETTING FOR THIS FEATURE: 50 decimal
END	‖‖‖‖‖‖‖‖‖‖‖‖

Code 39 — continued

Quiet Zones

This feature enables/disables the requirement that quiet zones must be present for Code 39 bar codes.

START	
STATE	**BARCODE**
Don't require Quiet Zones	
Require Quiet Zones	
END	

Code 39 — continued

Code 39 Stitching

Enables/disables stitching for Code 39 labels. When parts of a Code 39 bar code are presented to the scanner with this feature enabled, the bar code parts will be assembled by the scanner's software, and the data will be decoded if all bar code proofing requirements are met.

START	
STATE	BARCODE
Disable Code 39 Stitching	
Enable Code 39 Stitching	
END	

Code 39 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an Code 39 label must be decoded before it is accepted as good read.

START	
READS	BARCODE
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

Pharmacode 39

The following options apply to the Pharmacode 39 symbology.

Disable/Enable Pharmacode 39

When this feature is disabled, the scanner will not read Pharmacode 39 bar codes.

START	
STATE	BARCODE
Disable Pharmacode 39	
Enable Pharmacode 39	
END	

Pharmacode 39 — continued

Start/Stop Characters

Enables or disables transmission of Pharmacode 39 start/stop characters.

Check Character Transmit

Enable this option to transmit the check character with scanned bar code data.

START	||||| |||||||||||||| |||
STATE	BARCODE
Don't Transmit Start/Stop Characters	||| |||||||||||||||||
Transmit Start/Stop Characters	||| ||||||||||||| |||
Disable Check Char Transmission	||| ||||||| || ||||||||
Enable Check Char Transmission	||| ||||||| || ||||||
END	||| |||||||||||||||||

Code 128

The following options apply to the Code 128 symbology.

Disable/Enable Code 128

When this feature is disabled, the scanner will not read Code 128 bar codes.

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖‖
Disable Code 128	‖‖‖‖‖‖‖‖‖‖‖‖
Enable Code 128	‖‖‖‖‖‖‖‖‖‖‖‖

Code 128 — continued

Transmit Function Characters

Enables/disables transmission of Code128 function characters 1, 2, 3, and 4.

Function codes are transmitted as follows:

- FNC1 = 80 hex

- FNC2 = 81 hex

- FNC3 = 82 hex

- FNC4 = 83 hex

START	
STATE	BARCODE
Don't Trans-mit Function Characters	
Transmit Function Characters	
END	

Code 128 — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the Code 128 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the Code 128 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the Code 128 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the Code 128 Length 1, Length 2 Programming Instructions below.

Code 128 — continued

START	
MODE	BARCODE
Variable Length Decoding	
Fixed Length Decoding	
END	

Code 128 — continued

Code 128 Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

> **For Code 128 bar codes, only the data characters are included in the length calculations.**
>
> **NOTE**

4. Scan the END bar code.

SETTING	BARCODE
Set Length 1	DEFAULT SETTING FOR THIS FEATURE: 01
Set Length 2	DEFAULT SETTING FOR THIS FEATURE: 80 decimal
END	

Code 128 — continued

Code 128 Stitching

Enables/disables stitching for Code 128 labels. When parts of a Code 128 bar code are presented to the scanner with this feature enabled, the bar code parts will be assembled by the scanner's software, and the data will be decoded if all bar code proofing requirements are met.

START	
STATE	BARCODE
Disable Code 128 Stitching	
Enable Code 128 Stitching	
END	

Code 128 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an Code 128 label must be decoded before it is accepted as good read.

READS	BARCODE
START	
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

Interleaved 2 of 5

The following options apply to the Interleaved 2 of 5 (I 2 of 5) symbology.

Disable/Enable Interleaved 2 of 5

When this feature is disabled, the scanner will not read Interleaved 2 of 5 bar codes.

Check Digit Calculation

When enabled, the scanner will calculate the check digit of the labels.

Check Digit Transmit

Enable this option to transmit the check digit with scanned bar code data.

Interleaved 2 of 5 — continued

START	
STATE	BARCODE
Disable Interleaved 2 of 5	
Enable Interleaved 2 of 5	
Disable Check Digit Calculation	
Enable Check Digit Calculation	
Disable Check Digit Transmission	
Enable Check Digit Transmission	
END	

Interleaved 2 of 5 — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.

Interleaved 2 of 5 — continued

START	
MODE	BARCODE
Variable Length Decoding	
Fixed Length Decoding	
END	

Interleaved 2 of 5 — continued

Interleaved 2 of 5 Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

NOTE

For Interleaved 2 of 5 bar codes, lengths must be an even number. Additionally, all check and data characters are included in the length calculations.

4. Scan the END bar code.

SETTING	BARCODE
START	
Set Length 1	DEFAULT SETTING FOR THIS FEATURE: 06
Set Length 2	DEFAULT SETTING FOR THIS FEATURE: 50 decimal
END	

Interleaved 2 of 5 — continued

Interleaved 2 of 5 Stitching

Enables/disables stitching for Interleaved 2 of 5 labels. When parts of an Interleaved 2 of 5 bar code are presented to the scanner with this feature enabled, the bar code parts will be assembled by the scanner's software, and the data will be decoded if all bar code proofing requirements are met.

STATE	BARCODE
START	‖‖‖‖‖‖‖‖‖‖‖‖‖
Disable Interleaved 2 of 5 Stitching	‖‖‖‖‖‖‖‖‖‖‖‖
Enable Interleaved 2 of 5 Stitching	‖‖‖‖‖‖‖‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖‖

Interleaved 2 of 5 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an Interleaved 2 of 5 label must be decoded before it is accepted as good read.

START	|||| ||| ||||||||||| |||
READS	**BARCODE**
Minimum = 1 Read	|| ||| ||||||||| || |||||||| |||
Minimum = 2 Reads	|| ||| ||||||| || |||||| |||
Minimum = 3 Reads	|| ||| ||||||| || |||||||| |||
Minimum = 4 Reads	|| ||| ||||||| || |||||| |||
END	||| ||| |||||||||||| |||

Codabar

The following options apply to the Codabar symbology.

Disable/Enable Codabar

When this feature is disabled, the scanner will not read Codabar bar codes.

Check Character Verification

When enabled, the scanner will verify the check character of the labels.

Check Character Transmit

Enable this option to transmit the check character with scanned bar code data.

Codabar — continued

STATE	BARCODE
START	
Disable Codabar	
Enable Codabar	
Disable Check Char Verification	
Enable Check Char Verification	
Disable Check Char Transmission	
Enable Check Char Transmission	
END	

Codabar — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the Codabar Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the Codabar Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the Codabar Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the Codabar Length 1, Length 2 Programming Instructions below.

Codabar — continued

START	
MODE	BARCODE
Variable Length Decoding	
Fixed Length Decoding	
END	

Codabar — continued

Codabar Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

> **For Codabar bar codes, all start, stop, check and data characters are included in the length calculations.**
>
> **NOTE**

4. Scan the END bar code.

SETTING	BARCODE
Set Length 1	DEFAULT SETTING FOR THIS FEATURE: 03
Set Length 2	DEFAULT SETTING FOR THIS FEATURE: 50 decimal
END	

Codabar — continued

Quiet Zones

This feature enable/disables the requirement that quiet zones must be present for Codabar bar codes.

START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖
STATE	BARCODE
Don't require Quiet Zones	‖ ‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖ ‖‖
Require Quiet Zones	‖ ‖‖ ‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖ ‖‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖

Codabar — continued

Start/Stop Character Type

Codabar has four pairs of Start/Stop patterns. Select one pair to match your application.

Start/Stop Character Transmission

The transmission of start and end characters of Codabar is selected below.

Start/Stop Character Match

This feature enables/disables the requirement that start and stop characters match.

Codabar — continued

STATE	BARCODE
START	‖‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
Start/Stop Type: ABCD/ TN*E	‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖
Start/Stop Type: ABCD/ ABCD	‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖ ‖
Start/Stop Type: abcd/tn*e	‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖ ‖‖ ‖
Start/Stop Type: abcd/ abcd	‖‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖‖
Disable Start/Stop Char Transmission	‖‖ ‖‖‖‖‖‖ ‖‖‖‖‖‖‖‖‖‖
Enable Start/Stop Char Transmission	‖‖ ‖‖‖‖‖‖‖‖ ‖‖‖‖‖‖‖ ‖‖

Codabar — continued

STATE	BARCODE
START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖
Disable Start/Stop Char Match	‖ ‖‖‖‖‖‖ ‖‖‖‖‖‖ ‖
Enable Start/Stop Char Match	‖ ‖‖‖‖‖‖ ‖‖‖‖‖‖‖ ‖
END	‖ ‖ ‖‖‖‖‖‖‖‖‖ ‖ ‖

Codabar — continued

Codabar Stitching

Enables/disables stitching for Codabar labels. When parts of a Codabar label are presented to the scanner with this feature enabled, the bar code parts will be assembled by the scanner's software, and the data will be decoded if all bar code proofing requirements are met.

START	
STATE	BARCODE
Disable Codabar Stitching	
Enable Codabar Stitching	
END	

Codabar — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an Codabar label must be decoded before it is accepted as good read.
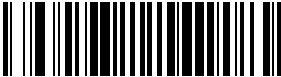
START	‖‖ ‖‖‖‖‖‖‖‖‖‖ ‖
READS	BARCODE
Minimum = 1 Read	‖‖‖‖‖‖‖‖ ‖‖‖‖‖
Minimum = 2 Reads	‖‖‖‖‖‖‖‖ ‖‖‖‖‖
Minimum = 3 Reads	‖‖‖‖‖‖‖‖ ‖‖‖‖‖
Minimum = 4 Reads	‖‖‖‖‖‖‖‖ ‖‖‖‖‖
END	‖‖‖‖‖‖‖‖‖‖ ‖

Code 93

The following options apply to the Code 93 symbology.

Disable/Enable Code 93

When this feature is disabled, the scanner will not read Code 93 bar codes.

STATE	BARCODE
START	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖‖ ‖‖
Disable Code 93	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖
Enable Code 93	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖
END	‖ ‖‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖

Code 93 — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the Code 93 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the Code 93 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the Code 93 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the Code 93 Length 1, Length 2 Programming Instructions below.

Code 93 — continued

MODE	BARCODE
START	
Variable Length Decoding	
Fixed Length Decoding	
END	

Code 93 — continued

Code 93 Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

For Code 93 bar codes, only the data characters are included in the length calculations.

NOTE

4. Scan the END bar code.

SETTING	BARCODE
Set Length 1	DEFAULT SETTING FOR THIS FEATURE: 01
Set Length 2	DEFAULT SETTING FOR THIS FEATURE: 50 decimal
END	

Code 93 — continued

Code 93 Stitching

Enables/disables stitching for Code 93 bar codes. When parts of a Code 93 label are presented to the scanner with this feature enabled, the bar code parts will be assembled by the scanner's software, and the data will be decoded if all bar code proofing requirements are met.

START	
STATE	BARCODE
Disable Code 93 Stitching	
Enable Code 93 Stitching	
END	

Code 93 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an Code 93 label must be decoded before it is accepted as good read.

START	
READS	**BARCODE**
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

MSI/Plessey

The following options apply to the MSI/Plessey symbology.

Disable/Enable MSI/Plessey

When this feature is disabled, the scanner will not read MSI/Plessey bar codes.

Check Digit Verification

This feature specifies whether one or two check digits are to be calculated and verified.
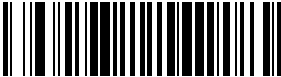
Check Digit Transmit

When this option is enabled, the scanner will transmit one-digit or two-digit check digits, depending upon the setting for check digit verification.

MSI/Plessey — continued

STATE	BARCODE
START	

STATE	BARCODE
Disable MSI/Plessey	
Enable MSI/Plessey	
Disable Check Digit Verification	
Enable Check Digit Verification	
1-Digit Check Digit Verification	
2-Digit Check Digit Verification	

MSI/Plessey — continued

STATE	BARCODE
START	
Disable Check Digit Transmission	
Enable Check Digit Transmission	
END	

MSI/Plessey — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.

MSI/Plessey — continued

MODE	BARCODE
START	
Variable Length Decoding	
Fixed Length Decoding	
END	

MSI/Plessey — continued

MSI/Plessey Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

For MSI/Plessey bar codes, all check and data characters are included in the length calculations.

NOTE

Scan the END bar code.

SETTING	BARCODE
Set Length 1	‖‖‖ ‖‖‖‖‖ ‖ ‖ ‖‖‖‖‖ ‖ DEFAULT SETTING FOR THIS FEATURE: 04
Set Length 2	‖‖‖ ‖‖‖‖‖ ‖‖ ‖ ‖‖‖‖ ‖ DEFAULT SETTING FOR THIS FEATURE: 16 decimal
END	‖‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖ ‖

MSI/Plessey — continued

MSI/Plessey Stitching

Enables/disables stitching for MSI/Plessey bar codes. When parts of an MSI/Plessey label are presented to the scanner with this feature enabled, the bar code parts will be assembled by the scanner's software, and the data will be decoded if all bar code proofing requirements are met.

STATE	BARCODE
START	||| ||| |||| |||| |||| |||
Disable MSI/Plessey Stitching	||| ||| ||| |||| |||
Enable MSI/Plessey Stitching	||| ||| ||| |||| |||
END	||| ||| |||| |||| |||

MSI/Plessey — continued

Minimum Reads

This feature specifies the minimum number of consecutive times an MSI/Plessey label must be decoded before it is accepted as good read.

START	
READS	BARCODE
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

Standard 2 of 5

The following options apply to the Standard 2 of 5 symbology.

Disable/Enable Standard 2 of 5

When this feature is disabled, the scanner will not read Standard 2 of 5 bar codes.
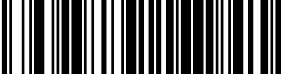
Check Digit Verification

When enabled, the scanner will verify the check digit of the labels.

Check Digit Transmit

When this option is enabled, the scanner will transmit the check digit.

Standard 2 of 5 — continued

STATE	BARCODE
START	
Disable Std 2 of 5	
Enable Std 2 of 5	
Disable Check Digit Verification	
Enable Check Digit Verification	
Disable Check Digit Transmission	
Enable Check Digit Transmission	
END	

Standard 2 of 5 — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.

Standard 2 of 5 — continued

START	
MODE	BARCODE
Variable Length Decoding	
Fixed Length Decoding	
END	

Standard 2 of 5 — continued

Standard 2 of 5 Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

> **For Standard 2 of 5 bar codes, all check and data characters are included in the length calculations.**
>
> **NOTE**

4. Scan the END bar code.

SETTING	BARCODE
Set Length 1	DEFAULT SETTING FOR THIS FEATURE: 08
Set Length 2	DEFAULT SETTING FOR THIS FEATURE: 50 decimal
END	

Standard 2 of 5 — continued

Standard 2 of 5 Stitching

Enables/disables stitching for Standard 2 of 5 bar codes. When parts of a Standard 2 of 5 label are presented to the scanner with this feature enabled, the bar code parts will be assembled by the scanner's software, and the data will be decoded if all bar code proofing requirements are met.

START	
STATE	BARCODE
Disable Std 2 of 5 Stitching	
Enable Std 2 of 5 Stitching	
END	

Standard 2 of 5 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times a Standard 2 of 5 label must be decoded before it is accepted as good read.

READS	BARCODE
START	
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

PDF 417

The following options apply to the PDF 417 symbology.

Disable/Enable PDF 417

When this feature is disabled, the scanner will not read PDF 417 bar codes.

STATE	BARCODE
START	|||
Disable PDF417	|||
Enable PDF 417	|||
END	|||

PDF 417 — continued

Length Control

Fixed Length Decoding — When fixed length decoding is enabled, the scanner will decode a bar code if the label length matches one of the configurable fixed lengths.

Variable Length Decoding — When variable length decoding is enabled, the scanner will decode a bar code if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START bar code.

2. Scan the Fixed Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the first fixed length by following the PDF 417 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the second fixed length (or to '0000' if there is only one fixed length) by following the PDF 417 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START bar code.

2. Scan the Variable Length Decoding bar code.

3. Scan the END bar code.

4. Set Length 1 to the minimum length by following the PDF 417 Length 1, Length 2 Programming Instructions below.

5. Set Length 2 to the maximum length by following the PDF 417 Length 1, Length 2 Programming Instructions below.

PDF 417 — continued

START	‖‖ ‖‖‖ ‖‖‖‖‖‖‖‖‖‖‖
MODE	BARCODE
Variable Length Decoding	‖‖ ‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖‖‖ ‖
Fixed Length Decoding	‖‖ ‖‖‖‖‖‖ ‖ ‖‖‖‖‖‖‖‖ ‖
END	‖‖ ‖ ‖‖‖‖‖‖‖‖‖‖‖ ‖‖

PDF 417 — continued

PDF 417 Length 1, Length 2 Programming Instructions

1. Scan the START bar code.

2. Scan either the Set Length 1 or Set Length 2 bar code.

3. Turn to Appendix C, Alpha-Numeric Pad and scan the two digits representing the length in decimal notation.

> **For PDF 417 bar codes, only the data characters are included in the length calculations.**
>
> **NOTE**

Scan the END bar code.

SETTING	BARCODE
Set Length 1	‖‖‖‖‖‖‖‖‖‖‖‖‖ DEFAULT SETTING FOR THIS FEATURE: 01
Set Length 2	‖‖‖‖‖‖‖‖‖‖‖‖‖ DEFAULT SETTING FOR THIS FEATURE: 600 decimal
END	‖‖‖‖‖‖‖‖‖‖‖‖‖

PDF 417 — continued

Minimum Reads

This feature specifies the minimum number of consecutive times a PDF 417 label must be decoded before it is accepted as good read.

START	
READS	BARCODE
Minimum = 1 Read	
Minimum = 2 Reads	
Minimum = 3 Reads	
Minimum = 4 Reads	
END	

NOTES

Appendix A
Product Specifications

Optical and Read Performance Parameters

Parameter	Specification
Scanning Width	2" wide at 1" from scanner 6" wide at 7" from scanner
Minimum Resolution	4mil minimum element size (at some distance, no implied DOF)

Depth of Field
   (75% read rate; 90% PCS;
   Code 39 with 2.5:1 W/N
   ratio except for 13 mils)
	5 mil — 3 to 6"/7.6 to 15.2 cm
	7.5 mil — 2 to 16"/5.1 to 40.6 cm
	10 mil — 1.5 to 22"/3.8 to 55.9 cm
	13 mil — 1 to 30"/2.5 to 76.2 cm
	20 mil — 1 to 42"/2.5 to 106.7 cm
	55 mil — 2 to 80"/5.1 to 203.2 cm
	
	Minimum distance determined by symbol length and scan angle. Printing resolution, contrast and ambient light dependent.
	13 mil DOF based on UPC. All others are Code 39. All labels grade A, minimum illumination: 300 Lux, 20° C, label perpendicular to the optical axis.

Minimum Print Contrast Ratio	20%
Skew[a] (Yaw)	± 60°
Pitch[a.]	± 65°
Roll[a.]	± 40°

a. DOF will be reduced whenever the label is not perpendicular to the optical axis.

Physical Properties

Parameter	Specification
Dimensions (Typical):	
Height	7.5"/190 mm
Length	4.5"/115 mm
Width	3.0"/75 mm
Weight	10 ounces/284 g (without cable)
Voltage Requirements	+4 to 14 VDC +/- 5%

Electrical Parameters

Parameter	Specification
Input Voltage	+4 to 14 VDC
Input Power	
Maximum Operating Power	2.4 W
Typical Operating Power	1.4 W
Typical Standby Power	1 w
Input Current	
Maximum Operating Current	480 mA @ 5VDC
Typical Operating Current	270 mA @ 5VDC
Typical Standby Current	210 mA @ 5VDC
Sleep Mode Current	Less than 1 mA

Environmental Parameters

Parameter	Specification
Mechanical Shock	50 drops from 6.5 feet (2 meters) to concrete -22° F to 122° F (-30° C to +50° C)

Contaminants
    Spray/rain
    Dust/particulate
	Scanners:
	Spray/rain — IEC 529-IPX5DW
	Dust/particulate — IEC 529-IP6XDW
	
	Base Stations and Charger:
	Spray/rain — IEC 529-IPX4DW
	Dust/particulate — IEC 529-IP5XDW

Temperature Ranges:
 	
    Operating
 	
    Storage
	
	-22° F to +122° F (-30° C to +50° C) Corded
	-4° F to +122° F (-20° C to +50° C) RF
	
	-40° F to +140° F (-40° C to + 60°C)

Humidity	0 to 95% non-condensing
Beeper/Speaker	87 dBA for operator at a distance of 19" (50cm)
Vibration	Meets MIL-STD-810F

Other Parameters

Parameter	Specification
Warranty	3 years
MTBF	55,000 hours

NOTES

Appendix B

Cable Pinouts

Standard Cable Pinouts (Primary Interface Cables)

RS-232

```
1
2   CTS
3
4   RTS
5   RXD
6   TXD
7
8   VCC IN
9   GND
10  Cable Select
```

10 Position RJ

Pin 1

(Scanner End)
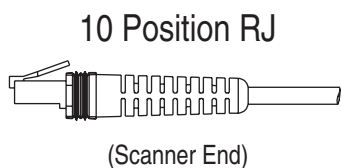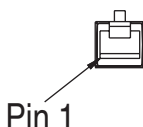
IBM Port 5B/9B/17

```
1
2
3
4   DATA -
5
6   DATA +
7
8   VCC_IN
9   GND
10
```

10 Position RJ

Pin 1

(Scanner End)
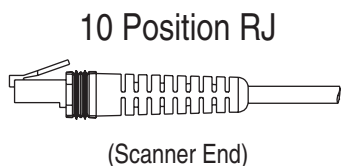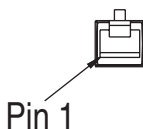
IBM USB

1
2
3
4   D -
5
6   D +
7
8   VIN
9   GND
10

10 Position RJ

Pin 1

(Scanner End)
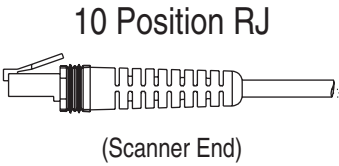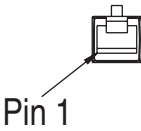
USB & USB Keyboard

1
2
3
4   D -
5
6   D +
7
8   VBUS_VIN
9   GND
10

10 Position RJ

Pin 1

(Scanner End)
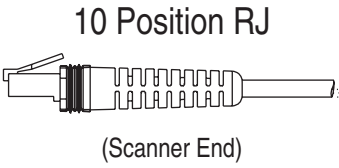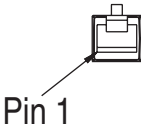
Wand Emulation

1
2
3   WAND~
4
5
6
7
8   VCC_IN
9   GND
10

10 Position RJ

Pin 1

(Scanner End)
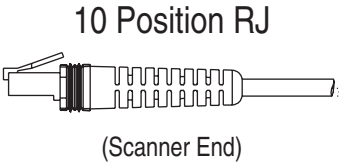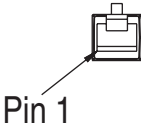
Keyboard Wedge

1
2 KB_DATA
3 AT_CLK
4 KB_CLK
5
6 AT_DATA
7
8 VCC_IN
9 GND
10

10 Position RJ

Pin 1

(Scanner End)
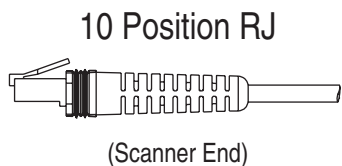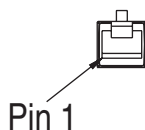
NOTES

Appendix C
Alpha-Numeric Pad

A

B

C

D
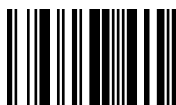
E

F

Alpha-Numeric Pad

||||||||||||||||||
1

|||||||||||||||||||
2

||||||||||||||||||
3

||||||||||||||||||
4

||||||||||||||||||
5

||||||||||||||||||
6

||||||||||||||||||
7

||||||||||||||||||
8

||||||||||||||||||
9

||||||||||||||||||
0

Appendix D
Default Settings

Defaults by Symbology

The following is a partial list of key settings for each symbology type.

Code Type	Read Enable	Checksum Verification Enable	Checksum Transmission Enable	Label ID
UPC-A	✓	✓	✓	A
UPC-E	✓	✓	✓	E
EAN-13	✓	✓	✓	F
EAN-8	✓	✓	✓	FF
RSS-14				R4
RSS Expanded				RX
Code 39	✓		✓	*
PharmaCode 39				A
Code 128	✓			#
Interleaved 2 of 5			✓	i
Codabar			✓	%
Code 93				&
MSI/Plessey			✓	@
Standard 2 of 5			✓	i
PDF417				P

Interface Default Exceptions

The factory default settings indicated in the programming sections (by bold text and yellow highlighting) reflect factory configuration for the RS-232 standard interface. The following tables list default exceptions by interface for the remaining available interfaces.

IBM Interfaces

IBM Interfaces include IBM-USB, IBM Port 9B, IBM Port5B and IBM Port17.

Parameter	Default Setting
IBM Interface Type	IBM Port 9B
Number of Host Transmit Buffers	One Buffer
Label I.D. Transmission	Disable
Suffix Characters	No Suffix

RS-232 Wincor/Nixdorf

Parameter	Default Setting
Interface Type	RS-232-WN
Number of Host Transmit Buffers	One Buffer
RS-232 Parity	Odd
RS-232 Hardware Control	CTS Flow Control
UCC/EAN-128 Label ID	'P'
Code 93 Label ID	'L'
Code 128 Label ID	'K'
Codabar Label ID	'N'
EAN-8 Label ID	'B'
EAN-13 Label ID	'F'
ISBN Label ID	'A'
Interleaved 2 of 5 Label ID	'I'
Standard 2 of 5 Label ID	'H'
MSI/Plessey Label ID	'O'
UPC-E Label ID	'C'
PDF 417 Label ID	'Q'
RSS-14 Label ID	'E'
RSS Expanded Label ID	'E'

Keyboards

Keyboard interfaces include USB Keyboard and Keyboard Wedge A-Y.

Parameter	Default Setting
Keyboard Wedge Interface Type	USB Keyboard
Label ID Transmission	Disable

Appendix E

Keyboard Function Key Mappings

Keyboard Model Cross Reference

Table E-2 summarizes the keyboard models, their defined protocol, scancode set, and some unique features. The remaining tables in this chapter provide the function key maps associated with each of the scancode sets.

Table E-1. Keyboard Model Cross Reference

Model Type	I/F ID	Trans-mission Protocol	Scancode Set	Func. Key Map Support	Use Country Mode
PC/XT Foreign ALT Mode	Wedge A	PC/XT	Scan Set 1	No	No
AT; PS/2 25-286; PS/2 30-286; PS/2 50, 50Z; PS/2 60,70,80,90,95 Foreign ALT Mode	Wedge B	AT/PS2	Scan Set 2	No	No
PS/2 25 and 30 Foreign ALT Mode	Wedge C	AT/PS2	Scan Set 1	No	No
PC/XT U.S. Mode	Wedge D	PC/XT	Scan Set 1	Yes	No
AT; PS/2 25-286; PS/2 30-286; PS/2 50, 50Z; PS/2 60,70,80,90,95 U.S. Mode + specific country support	Wedge E	AT/PS2	Scan Set 2	Yes	Yes
PS/2 25 and 30 U.S. Mode	Wedge F	AT/PS2	Scan Set 1	Yes	No
IBM 3xxx Terminals (122-key keyboard)	Wedge G	AT/PS2	Scan Set 3	Yes	No
IBM 3xxx Terminals (102-key keyboard)	Wedge H	AT/PS2	Scan Set 3	Yes	No
PS55 5530T with JAPANESE DOS (TDOS)	Wedge I	AT/PS2	Japanese DOS	Yes	No
NEC 9801	Wedge J	NEC 9801	NEC 9801	Yes	No

Table E-2. Scanset 1 Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT right Make	E0h 38h
01	SOH	ALT right Break	E0h B8h
02	STX	ALT left Make	38h
03	ETX	ALT left Break	B8h
04	EOT	CTRL left Make	1Dh
05	ENQ	CTRL left Break	9Dh
06	ACK	CTRL right Make	E0h 1Dh
07	BEL	CTRL right Break	E0h 9Dh
08	BS	BS	0Eh
09	HT	TAB right	0Fh
0A	LF	RIGHT arrow (inner keypad)	4Dh + E0
0B	VT	TAB left	0Fh + S
0C	FF	Enter (inner keypad)	1Ch + E0
0D	CR	CR	1Ch
0E	SO	INSERT (inner keypad)	52h + E0
0F	SI	PAGE UP (inner keypad)	49h + E0
10	DLE	PAGE DOWN (inner keypad)	51h + E0
11	DC1	HOME (inner keypad)	47h + E0
12	DC2	LEFT arrow (inner keypad)	4Bh + E0
13	DC3	DOWN arrow (inner keypad)	50h + E0
14	DC4	UP arrow (inner keypad)	48h + E0

Table E-3. Scanset 2 Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT right Make	E0h 11h
01	SOH	ALT right Break	E0h F0h 11h
02	STX	ALT left Make	11h
03	ETX	ALT left Break	F0h 11h
04	EOT	CTRL left Make	14h
05	ENQ	CTRL left Break	F0h 14h
06	ACK	CTRL right Make	E0h 14h
07	BEL	CTRL right Break	E0h F0h 14h
08	BS	BS	66h
09	HT	TAB right	0Dh
0A	LF	RIGHT arrow (inner keypad)	74h + E0
0B	VT	TAB left	0Dh + S
0C	FF	Enter (right keypad)	5Ah + E0
0D	CR	CR	5Ah
0E	SO	INSERT (inner keypad)	70h + E0
0F	SI	PAGE UP (inner keypad)	7Dh + E0
10	DLE	PAGE DOWN (inner keypad)	7Ah + E0
11	DC1	HOME (inner keypad)	6Ch + E0
12	DC2	LEFT arrow (inner keypad)	6Bh + E0
13	DC3	DOWN arrow (inner keypad)	72h + E0
14	DC4	UP arrow (inner keypad)	75h + E0
15	NAK	F6	0Bh
16	SYN	F1	05h
17	ETB	F2	06h
18	CAN	F3	04h
19	EM	F4	0Ch
1A	SUB	F5	03h
1B	ESC	ESC	76h
1C	FS	F7	83h
1D	GS	F8	0Ah
1E	RS	F9	01h
1F	US	F10	09h

Table E-4. Scanset 3, 102-Key Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT right Make	39h
01	SOH	ALT right Break	F0h 39h
02	STX	ALT left Make	19h
03	ETX	ALT left Break	F0h 19h
04	EOT	CTRL left Make	11h
05	ENQ	CTRL left Break	F0h 11h
06	ACK	CTRL right Make	58h
07	BEL	CTRL right Break	F0h 58h
08	BS	BS	66h
09	HT	TAB right	0Dh
0A	LF	RIGHT arrow (inner keypad)	6Ah
0B	VT	TAB left	0Dh + S
0C	FF	Enter (inner keypad)	79h
0D	CR	CR	5Ah
0E	SO	INSERT (inner keypad)	67h
0F	SI	PAGE UP (inner keypad)	6Fh
10	DLE	PAGE DOWN (inner keypad)	6Dh
11	DC1	HOME (inner keypad)	6Eh
12	DC2	LEFT arrow (inner keypad)	61h
13	DC3	DOWN arrow (inner keypad)	60h
14	DC4	UP arrow (inner keypad)	63h
15	NAK	F6	2Fh
16	SYN	F1	07h
17	ETB	F2	0Fh
18	CAN	F3	17h
19	EM	F4	1Fh
1A	SUB	F5	27h
1B	ESC	ESC	08h
1C	FS	F7	37h
1D	GS	F8	3Fh
1E	RS	F9	47h
1F	US	F10	4Fh

Table E-5. Scanset 3 122-Key Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT Right Make	39h
01	SOH	ALT Right Break	F0h 39h
02	STX	ALT left Make	19h
03	ETX	ALT left Break	F0h 19h
04	EOT	CTRL left (RESET) Make only	11h
05	ENQ	CTRL left (RESET) Make/Break	11h F0h 11h
06	ACK	ONLINE Enter Make only	58h
07	BEL	ONLINE Enter Make/Break	58h F0h 58h
08	BS	BS	66h
09	HT	TAB right	0Dh
0A	LF	RIGHT arrow (inner keypad)	6Ah
0B	VT	TAB left	0Dh + S
0C	FF	CR (FIELD EXIT) Make only	5Ah F0h 5Ah
0D	CR	CR (FIELD EXIT) Make/Break	5Ah
0E	SO	INSERT (inner keypad)	65h
0F	SI	FIELD +	79h
10	DLE	FIELD -	7Ch
11	DC1	HOME (inner keypad)	62h
12	DC2	LEFT arrow (inner keypad)	61h
13	DC3	DOWN arrow (inner keypad)	60h
14	DC4	UP arrow (inner keypad)	63h
15	NAK	F6	2Fh
16	SYN	F1	07h
17	ETB	F2	0Fh
18	CAN	F3	17h
19	EM	F4	1Fh
1A	SUB	F5	27h
1B	ESC	ESC	08h
1C	FS	F7	37h
1D	GS	F8	3Fh
1E	RS	F9	47h
1F	US	F10	4Fh

Table E-6. Japanese DOS Function Key Map

ASCII value	ASCII code	Key	Scancode
00h	NUL	ALT right Make	31h
01h	SOH	ALT right Break	B1h
02h	STX	ALT left Make	31h
03h	ETX	ALT left Break	B1h
04h	EOT	CTRL left Make	41h
05h	ENQ	CTRL left Break	C1h
06h	ACK	CTRL right Make	41h
07h	BEL	CTRL right Break	C1h
08h	BS	BS	3Eh
09h	HT	TAB right	3Ch
0Ah	LF	RIGHT arrow (inner keypad)	4Dh
0Bh	VT	TAB left	3Ch + S
0Ch	FF	Enter (right keypad)	60h
0Dh	CR	CR	3Bh
0Eh	SO	INSERT (inner keypad)	52h
0Fh	SI	PAGE UP (inner keypad)	49h
10h	DLE	PAGE DOWN (inner keypad)	51h
11h	DC1	HOME (inner keypad)	4Ch
12h	DC2	LEFT arrow (inner keypad)	4Bh
13h	DC3	DOWN arrow (inner keypad)	4Ah
14h	DC4	UP arrow (inner keypad)	4Eh
15h	NAK	F6	6Dh
16h	SYN	F1	68h
17h	ETB	F2	69h
18h	CAN	F3	6Ah
19h	EM	F4	6Bh
1Ah	SUB	F5	6Ch
1Bh	ESC	ESC	3Dh
1Ch	FS	F7	6Eh
1Dh	GS	F8	6Fh
1Eh	RS	F9	70h
1Fh	US	F10	71h

Table E-7. NEC 9801-Key Function Key Map

ASCII value	ASCII code	Key	Scancode
00h	NUL	unused	n/a
01h	SOH	CR	1Ch
02h	STX	CAPS LOCK ON (make)	71h
03h	ETX	CAPS LOCK OFF (break)	F1h
04h	EOT	CTRL left Make	74h
05h	ENQ	CTRL left Break	F4h
06h	ACK	CTRL-C	60h
07h	BEL	n/a	n/a
08h	BS	BS	0Eh
09h	HT	TAB right	0Fh
0Ah	LF	RIGHT arrow (inner keypad)	3Ch
0Bh	VT	TAB left	0Fh + S
0Ch	FF	DELETE	39h
0Dh	CR	CR	1Ch
0Eh	SO	INSERT (inner keypad)	38h
0Fh	SI	KATAKANA LOCK ON (Make)	72h
10h	DLE	KATAKANA LOCK OFF (Break)	F2h
11h	DC1	HOME (inner keypad)	3Eh
12h	DC2	LEFT arrow (inner keypad)	3Bh
13h	DC3	DOWN arrow (inner keypad)	3Dh
14h	DC4	UP arrow (inner keypad)	3Ah
15h	NAK	F6	67h
16h	SYN	F1	62h
17h	ETB	F2	63h
18h	CAN	F3	64h
19h	EM	F4	65h
1Ah	SUB	F5	66h
1Bh	ESC	ESC	00h
1Ch	FS	F7	68h
1Dh	GS	F8	69h
1Eh	RS	F9	6Ah
1Fh	US	F10	6Bh

Appendix F

Host Commands

Accepting RS-232 Commands

The scanner responds to the following RS-232 commands:

COMMAND	ASCII	HEX	COMMENT
Enable Scanner	E	0x45	
Disable Scanner	D	0x44	
Reset Scanner	R	0x52	
Not On File Indication	F	0x46	Long series of beeps
Beep Good Read Tone	B	0x42	Beeps if Good Read Beep is enabled
Force Good Read Tone		0x01	Beeps regardless of beep setting
Bel		0x07	Force Good Read Tone
Identification request	i	0x69	Returns long response[a]
Health request	h	0x68	Returns long response[a]
Status request	s	0x73	Returns long response[a]

a. Call Tech Support for information.

If one of the above commands is received, the scanner will perform the steps indicated for the command. Host commands for other interfaces is also available. Contact Tech Support for more details.

NOTES

Appendix G

Sample Symbols

UPC-A

0 123456 7890

Interleaved 2 of 5

1234567890

Code 128

Code 128
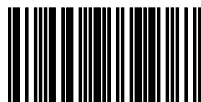
EAN-13

9 780330 290951

Code 39
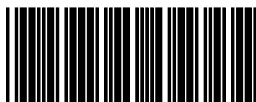
BC321

Codabar
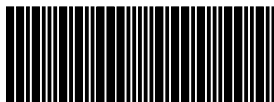
A13579B

Code 93

123456-9$

Code 2 of 5

123456

Sample Symbols

PDF417

Car Registration

RSS-14

(01)00123456789012

RSS Expanded

0100123456789050

ASCII Chart

ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.
NUL	00	SP	20	@	40	'	60
SOH	01	!	21	A	41	a	61
STX	02	"	22	B	42	b	62
ETX	03	#	23	C	43	c	63
EOT	04	$	24	D	44	d	64
ENQ	05	%	25	E	45	e	65
ACK	06	&	26	F	46	f	66
BEL	07	'	27	G	47	g	67
BS	08	(	28	H	48	h	68
HT	09	)	29	I	49	i	69
LF	0A	*	2A	J	4A	j	6A
VT	0B	+	2B	K	4B	k	6B
FF	0C	,	2C	L	4C	l	6C
CR	0D	-	2D	M	4D	m	6D
SO	0E	.	2E	N	4E	n	6E
SI	0F	/	2F	O	4F	o	6F
DLE	10	0	30	P	50	p	70
DC1	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3	13	3	33	S	53	s	73
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75
SYN	16	6	36	V	56	v	76
ETB	17	7	37	W	57	w	77
CAN	18	8	38	X	58	x	78
EM	19	9	39	Y	59	y	79
SUB	1A	:	3A	Z	5A	z	7A
ESC	1B	;	3B	[	5B	{	7B
FS	1C	<	3C	\	5C			7C
GS	1D	=	3D	]	5D	}	7D
RS	1E	>	3E	^	5E	~	7E
US	1F	?	3F	_	5F	DEL	7F

Asia Pacific

PSC Hong Kong

Hong Kong

Telephone: [852]-2-584-6210

Fax: [852]-2-521-0291

Australia

PSC Asia Pacific Pty Ltd.

North Ryde, Australia

Telephone: [61] 0 (2) 9878 8999

Fax: [61] 0 (2) 9878 8688

France

PSC S.A.R.L.

LES ULIS Cedex, France

Telephone: [33].01.64.86.71.00

Fax: [33].01.64 46.72.44

Germany

PSC GmbH

Darmstadt, Germany

Telephone: 49 (0) 61 51/93 58-0

Fax: 49 (0) 61 51/93 58 58

Italy

PSC S.p.A.

Vimercate (MI), Italy

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Fax: [39] (0) 39/6859496

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Fax: 81 (0)3 3491 6656

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Miami, Florida, USA

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Fax: (305) 591-3007

United Kingdom

PSC Bar Code Ltd.

Watford, England

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Fax: 44 (0) 1923 809 505

www.psc.com

PSC Inc.

959 Terry Street

Eugene, OR 97402

Telephone: (541) 683-5700

Fax: (541) 345-7140